

**STANDARD PATTERNS AND SIZES OF
VITRIFIED CLAY OR TERRA-COTTA
CHIMNEY TOPS,**

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

PATTERN.

F. O. W. 192.

[.....62 inches across the Cornice.]



2 inches, high.....]

STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA, WIND-CAPS, BONNETS, HOODS AND WINDGUARDS,

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

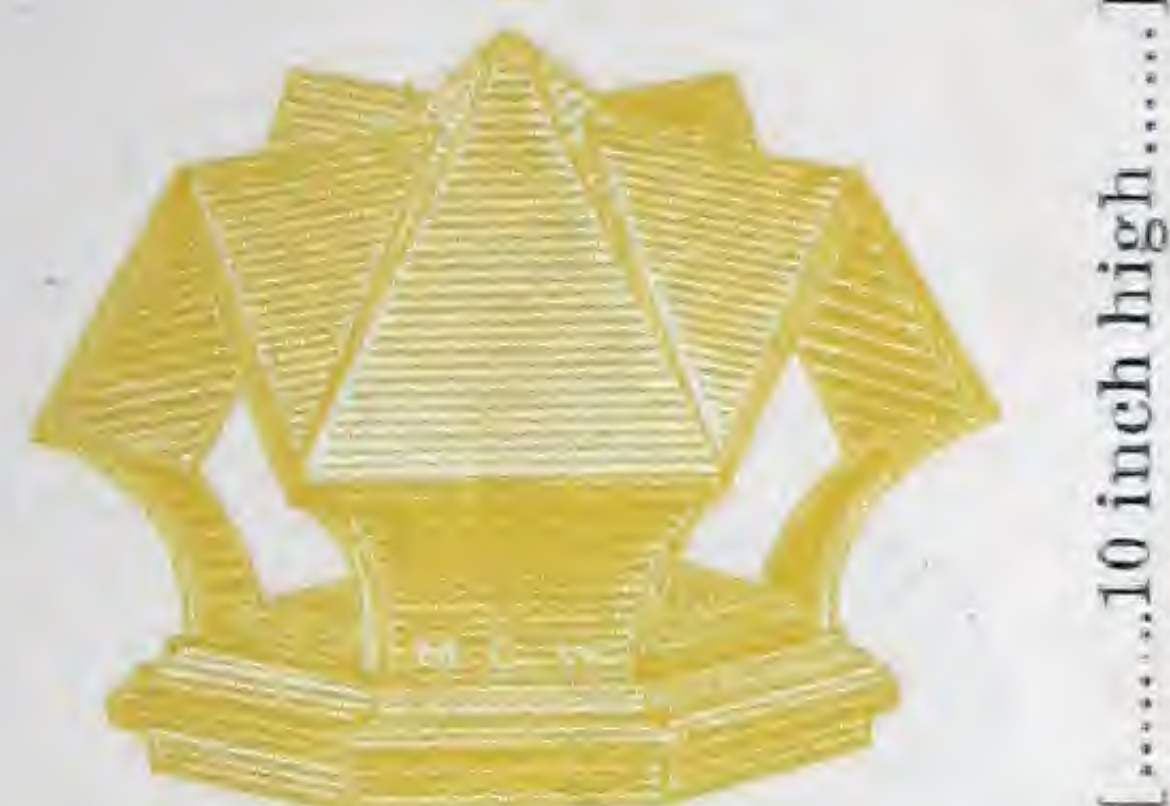
And used in connection with our Chimney Tops or with chimneys of brick or other material, to resist dampness, down draughts and the annoyance of birds.

PATTERN
No. 82.
Used as a finale piece
to fit on the Bonnet
G. O. W.



[.....11½ inch high.....]
Weight 11 lbs.

BONNET
PATTERN
G. O. W.



[.....10 inch high.....]

BASE { Octagonal in shape,
7½ inches inside,
10½ " outside.
Weight 15 lbs.

BONNET
PATTERN
H. O. W.



[.....17 inch high.....]

BASE { Octagonal in shape,
9¾ inches inside,
13½ " outside,
Bore 7½ inches. Weight 30 lbs.

This Bonnet,

G. O. W.

Can be used with or without Peak No. 82 and forms a WINDGUARD for Chimney Tops, A. O. 24, A. O. 30, and A. O. 36. (See page 6.)

This Bonnet,

H. O. W.

Will fit and forms a WINDGUARD for Chimney Tops, B. S. 36, 42, 48, 54, 60, and 66. (See pages 8 and 9.)

WINDCAP
PATTERN

O. R. W.



Height 6 to 12 inches
according to bore.

BASE { Round in shape,
inside, } DIAMETER
outside } AND WEIGHT
are according to the pipe it is
to fit.

This Windcap,

O. R. W.

Is made in sizes to fit and form a WINDGUARD for our "Round Pipe Tops," O.R. of either 4, 5, 6, 8, 10, 12, or 15 in. inside diameter of shaft, see page 5

HOOD
PATTERN

I. R. W.



[.....9½ inch high.....] for R. R. 30 or 36
[.....11 inch high.....] for R. R. 42,
[.....13 inch high.....] for R. R. 54.

BASE—Rectangular in shape and of the following dimensions,

13x8½	outside	Weight 15 lbs. (to fit R. R. 30 or 36.
17x12	"	31 " " R. R. 42
19x14	"	51 " " R. R. 54

This Hood,

I. R. W.

Will fit and form a WINDGUARD for Chimney Tops R. R. (See page 15.)

—SCALE OF MEASURE IS ONE INCH TO ONE FOOT.—

For prices see Price List No. 243, which will be sent free on application.

For Directions for setting up these Tops see page 2.

WINDGUARDS ARE CONTINUED ON NEXT PAGE.

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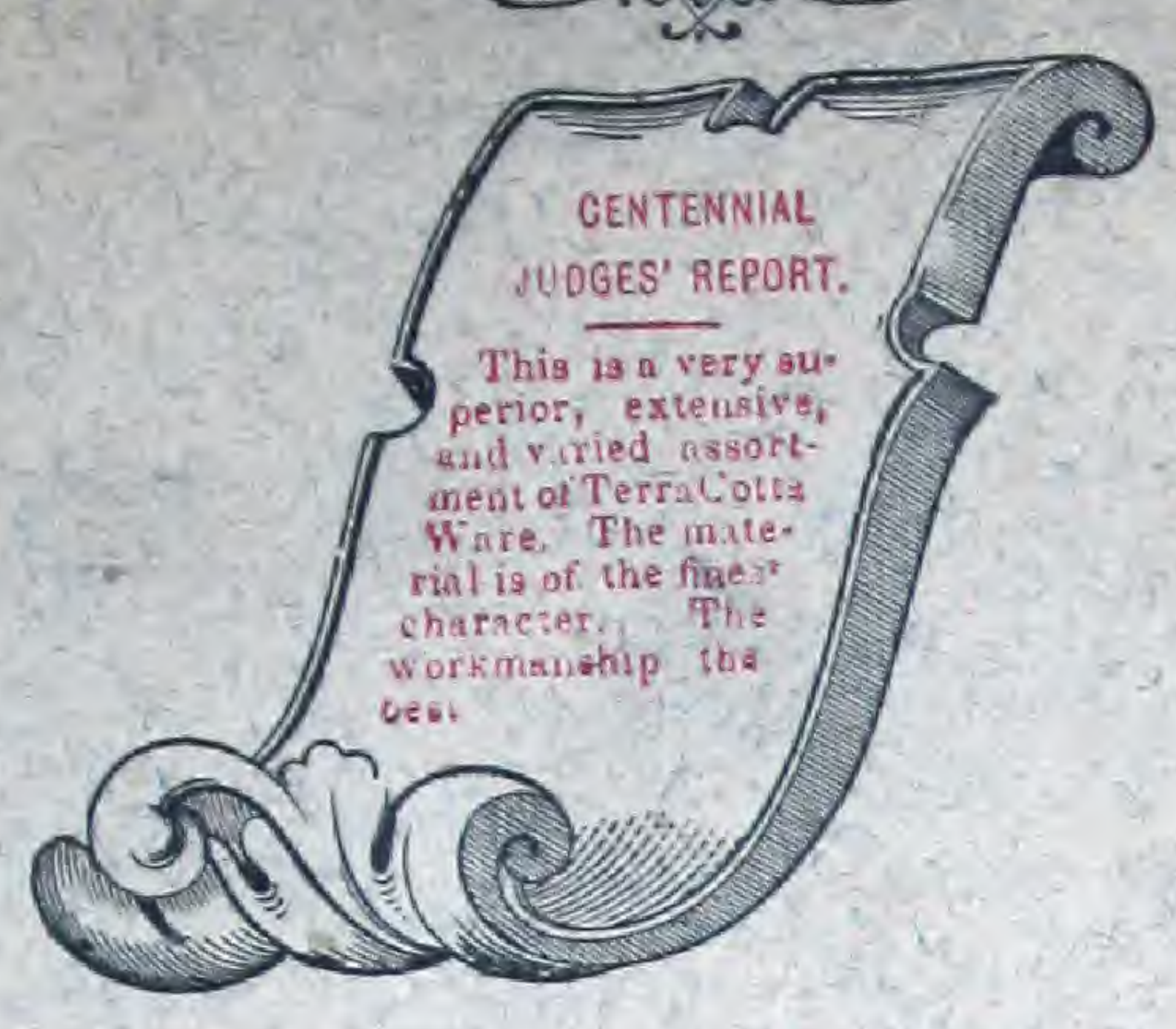
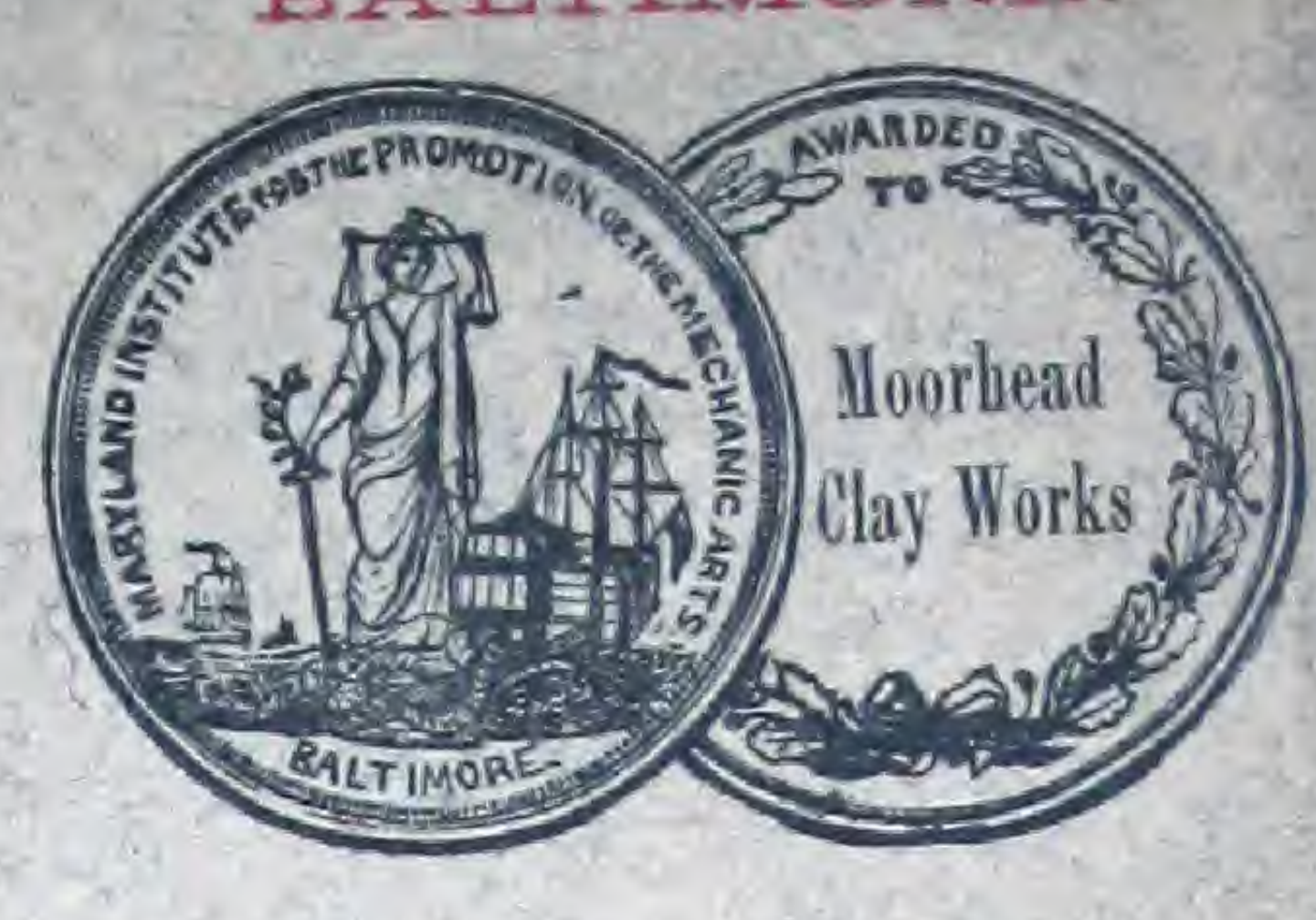
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MOORHEAD CLAY WORKS, ILLUSTRATED CATALOGUE

Price
Chimney
"
"
"
"
Wind
El

BUILDERS MATERIALS MADE OF TERRA COTTA OR VITRIFIED CLAY.

Factory.—EAST SPRING MILLS, PA. On the Norristown Railroad and Schuylkill Canal.

OFFICE AND WAREROOMS:
No. 11 SOUTH SEVENTH ST.,
(EAST SIDE BELOW MARKET ST.)
PHILADELPHIA, PA.

SEND ALSO FOR
CATALOGUES
OF
Drainage and Sewerage,
AND OF
Fancy Ware.

FOR *Mc* _____

_____ Street,
_____ Town,
_____ County,
_____ State.

Stamp.

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If this is not in your line please hand it to some one interested in this Ware.

H. HENRY, PRINTER, 21 South Seventh Street.

TERRA COTTA OR VITRIFIED CLAY WARE.

Terra Cotta in its literal meaning, viz.: "*baked earth*," necessarily includes every combination produced by the Ceramic art, but custom has restricted it to only one class of such productions, and it is in this restricted sense that it is here spoken of.

The different sub-divisions of the Ceramic art may be roughly designated from the ingredients of the material used. Thus:

1st. Common Earthenware may be said to include all those wares made from clays in which iron in some condition is a considerable ingredient, such as brick, common flower pots, etc. The peculiarities of this ware are its reddish color, soft texture, and absorbent power.

2d. Common Stoneware in which iron and other impurities are mostly absent, but the clay readily fuses in a semi-vitreous body, such as jugs, jars, and other clay kitchen utensils. The peculiarities of this ware are its bluish color, brittle fracture, and its non-absorbent quality.

3d. Terra Cotta in which iron, lime, and most other impurities are absent and the clay fuses only with great heat, such as drain and sewer pipes, chimney tops, etc. The peculiarities of this ware are its lustrous, whitish color, fibrous fracture, and nearly non-absorbent quality.

4th. Fire Clay in which lime, iron, or an alkali are absent, and the clay entirely resists fusion, such as fire bricks, retorts, etc. The peculiarities of this ware are its dead whitish color, short granulated fracture, and high absorbent quality.

5th. Porcelain in which alumina and silica are almost the sole ingredients, and iron, lime, and all other impurities are absent, such as the fine table and ornamental ware well known under the name "Porcelain." The peculiarities of this ware are its semi-transparency, and whitish, brittle, short, semi-vitreous fracture, and excessively fine granular and non-absorbent quality.

It will thus be seen that what is publicly known as Terra Cotta is intermediate between Stoneware and Fire Clay Ware, possessing largely the density of the one and the resistance to acids and the elements of the other, at the same time possessing a fibrous or tough structure peculiarly its own. It is composed of clays carefully selected and mixed with fire sands, formed into shape and then burned under white heats.

The public should discriminate enough between these different wares to select for any one purpose the kind which is especially adapted. Thus Common Earthenware from its absorbent power is well adapted for flower plants, but the presence of iron, as indicated by its reddish color, totally unfits it for use as drain or chimney tops, etc., as the acids engendered by sewage and coal quickly eat out the iron. So also Fire Clay, adapted for the said purpose, as from its short, brittle fracture, it is destroyed by exposure to the elements, whilst the high absorbent power and granulated fracture of Fire Brick, and the short, brittle fracture of Porcelain equally unfits them for the same purposes.

The very poorest of clay wares being very durable, compared with other material, suggests that it is only a long trial that positive assertions should be made as to the superior durability or adaptability of one kind of ware over another.

It is after many years of observation of actual facts, such as the rapid destruction of bricks in chimneys, and of common earthenware in sewers and drains, fire bricks exposed to the weather, and stoneware and porcelain cracked by heat and cold, that it has become a settled fact that the absence of iron and lime, the fibrous structure and slight absorbent qualities of terra cotta, render it the only material fit for the purposes mentioned in this book. But the good is cheap and everlasting, whilst the latter is short-lived and dear at any price.

The name also of "Vitrified Clay" has been given to this ware not because there is any pretensions that it actually fuses clay into glass (*i. e. a transparent, brittle body*), although, in one sense, it is to a slight degree partially fused, but more especially because a large proportion of this ware is purposely coated with a vitreous or glass surface, where its use demands a perfect non-absorbent and frictionless surface, as in drain or sewer pipe, but the whole class of wares, both glazed and unglazed, has by the public become known indefinitely as "Terra Cotta or Vitrified Clay Ware," and hence our adoption of the terms in the same sense as the public seems to demand.

The well-known advantages for many purposes of this ware are—

1st, Durability. The well-known fact that clay ware has been used from time immemorial; that its manufacture was in all probability the first industry practiced by man, and, that in almost every instance, it is the last and only relic left of extinct races of men, renders it unnecessary to urge this point. Before the never-ceasing attacks of Time, have disappeared marble, granite, iron, bronze, and all except, the everlasting piece of pottery, which after the lapse of ages still preserve, and for ages to come will preserve in perfect freshness, the image impressed upon it by him whose very nation has been forgotten. Pottery indeed displaces printing as "*the art preservative of all arts*."

2d, Resistance to damage by fire. A casual glance over the ruins wrought by any conflagration renders this self-evident. Iron has been warped or melted, wood has become ashes, marble has been shattered, and granite crumbled, whilst the clay bricks are all intact and ready for use in rebuilding.

3d, Strength. The resistance to force, of good Terra Cotta, is over five times that of bricks.

4th, Lightness. Its strength and toughness renders it possible to make great savings of handling and weight on foundations.

5th, Resistance to acids and the weather.

6th, Power of taking any form or shape and retaining it.

7th, Cheapness of duplicating every known shape.

8th, Beauty of surface and finish.

In the succeeding pages are given some of the special uses to which we have applied this time-tested and invaluable material.



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THE MOORHEAD CLAY WORKS'
CATALOGUE OF TERRA COTTA
BUILDING WARE.

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TERRA-COTTA CHIMNEY TOPS,

MANUFACTURED BY THE

MOORHEAD CLAY WORKS,

PHILADELPHIA.

The unsightly masses of bricks placed upon our houses which, as soon as finished are an eyesore, and which after a short time of exposure to the weather and the devouring coal gas, become an outrage on good taste and dangerous to surrounding property and to passers by, remained long without a remedy until the introduction of these now long tried TERRA-COTTA CHIMNEY TOPS, manufactured at the MOORHEAD CLAY WORKS, in this city,

They are made in one solid piece of mica and fire clay, shaped to any desired form, and burnt under a heat at which bricks are destroyed.

They are entirely FIRE PROOF and more safe than brick, stone, or cement.

They are INDESTRUCTIBLE—no storms, coal gas or heat having any effect upon them.

In Philadelphia there are to day at least 50,000 brick chimneys so badly eaten away by coal gas as to be in danger of falling at any moment to the risk of the surrounding property and the passer by.

If an examination is made of any brick chimney, especially where coal is used, which has been in use for six months, it will be seen that the gas has first eaten out the mortar and then attacked the softer bricks, as it has great affinity for the iron which give bricks their red color, (Terra-cotta clay is necessarily free from iron as is evidenced by its white color). Thousands of cases can be found where you can put your arm completely through holes eaten in brick chimneys. Our wares being free from lime and iron entirely resist gas and weather and have been known to be in constant use and exposure for over 100 years—a brick chimney would cost in such time \$100 for repairs.

They IMPROVE THE DRAUGHT by contracting the top of the flue, and throwing it into a cylindrical shape.

They BEAUTIFY any edifice by their airy gracefulness of shape.

They are CHEAPER than anything in existence, a 3 ft. Ornamental Top costing to-day \$3.75, or our "O. R. Pipe Tops," 39 inches high, costing 90cts. whilst a brick or stone chimney will cost more in the first place, and a five dollar bill every few years to repair the ravages of coal gas.

EASILY PUT UP, a man can carry it on his shoulder, set it in its place in a few minutes without scaffolding or dirt.

CAN BE PUT ON ANY BRICK OR STONE CHIMNEY, old or new, large or small, anywhere or can be used in connection with our terra-cotta flues without the use of a single brick or stone.

We give on the succeeding pages full directions for using and setting these tops, and also some of our standard sizes and patterns. In addition to these, we manufacture other and more ornamental patterns and any other shape or pattern to order.

For Prices see PRICE LIST No. 243, which can be had free of charge by application at our office.

IN SELECTING CHIMNEY TOPS, attention should be paid to the following points.

1st. Select a pattern which will harmonize in style with the general architectural design of the building upon which they will be placed.

2nd. Remember that the apparent height of these TOPS or of any object decreases very much as they are elevated in the air. That which appears too large when on a level with or near the eye, is very apt to appear ridiculously small when in its place, 20 or 80 feet above the spectator. As the chimneys are a very prominent feature in a house, this is an important point where beauty of design is desired.

3rd. In deciding upon a length of CHIMNEY TOP, always remember—1st. That the longer the Chimney Top, the more safety is secured to the supporting brick and stone work and neighboring walls, by keeping the devastating coal gas from them. (*The writer has seen the effects of this destroying agent, plainly evident, at least twenty feet down from the top of the chimney.*)

4th. The size of the base or bore is not so important, as any size of brick or stone chimney can be made to fit any of these chimney tops, by merely drawing in or spreading out the brick or stone work. See figure No. 1 in "Directions for Setting," page 2.

5th. Select tops made of good terra-cotta clay and branded with the name of a good maker, whose long experience and manufacturing facilities are a guarantee of their durability, (a great deal of rotten and worthless ware is palmed off on the inexperienced public under the name of terra-cotta, such ware is dear at any price.

DIRECTIONS FOR SETTING THE TERRA-COTTA CHIMNEY TOPS

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

If the tops are to be placed on brick or stone chimneys already built, it is but necessary to level the brick or stone work on the outside of the roof, drawing in or spreading out the top courses, in elaborate or plain a style as desired, so as to make the inside of the flue come flush with our tops as A. A. Fig. 1. The courses of brick showing above the roof should be of hard brick, laid in either good Roman or Portland Cement, to protect them against the rain and gas; and the top surface of brickwork as at I I I I, well covered with same kind of cement, well trowelled to slope outward from the CHIMNEY TOP, so as to shed the water away from the joints. At least one course of brick set in cement should be run around the chimney top to make assurance doubly sure against blowing off; (they are frequently set without any surrounding brick work.) (*These Tops, in connection with our "Terra-Cotta Flues," can be set without using any bricks whatever, as in figure No. 2.*)


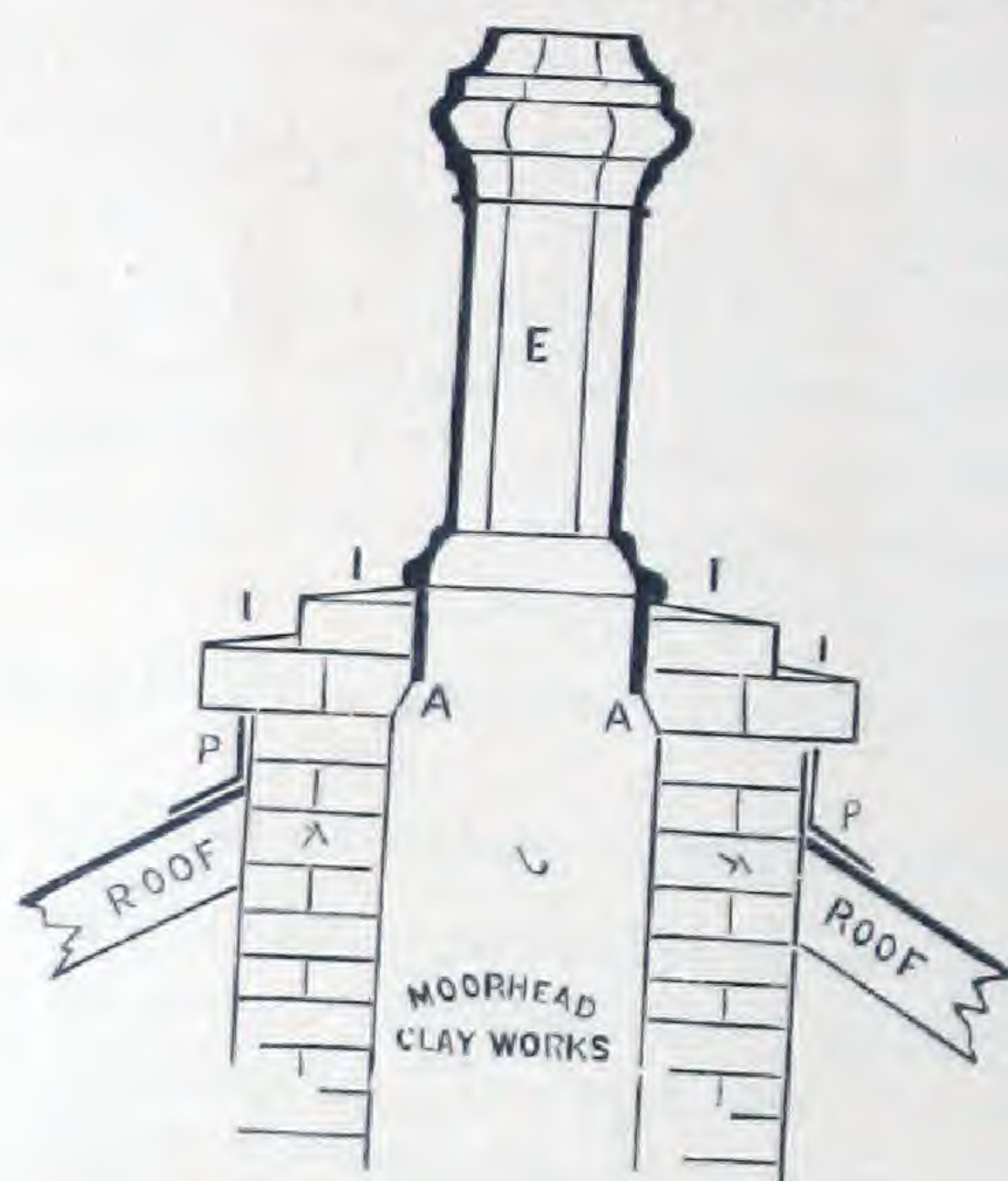
In mountainous or exposed sites, subject to very heavy winds, architects have secured them more firmly by means of two copper anchors, thus  the lower hook of which is built four courses down on the outside of flue, and the upper hook inserted in a hole made (to order when desired) on the outside of the base of the chimney tops. In our climate this precaution is not deemed necessary.

FIGURE No. 1.

ON BRICK OR STONE CHIMNEY.
CHIMNEY TOPS,
IN POSITION
TERRA-COTTA
ORNAMENTAL
SHOWING ONE OF OUR



A. A. The brick work is seen "drawn" in at the top to fit the top "E."
I. I. I. I. Showing the cement trowelled up to shed the water from the joints.
P. P. Felt or tin to shed the water away from brick work.
K. K. Brick Chimney.
E. Terra-Cotta Chimney supported on Brick work, K. K.

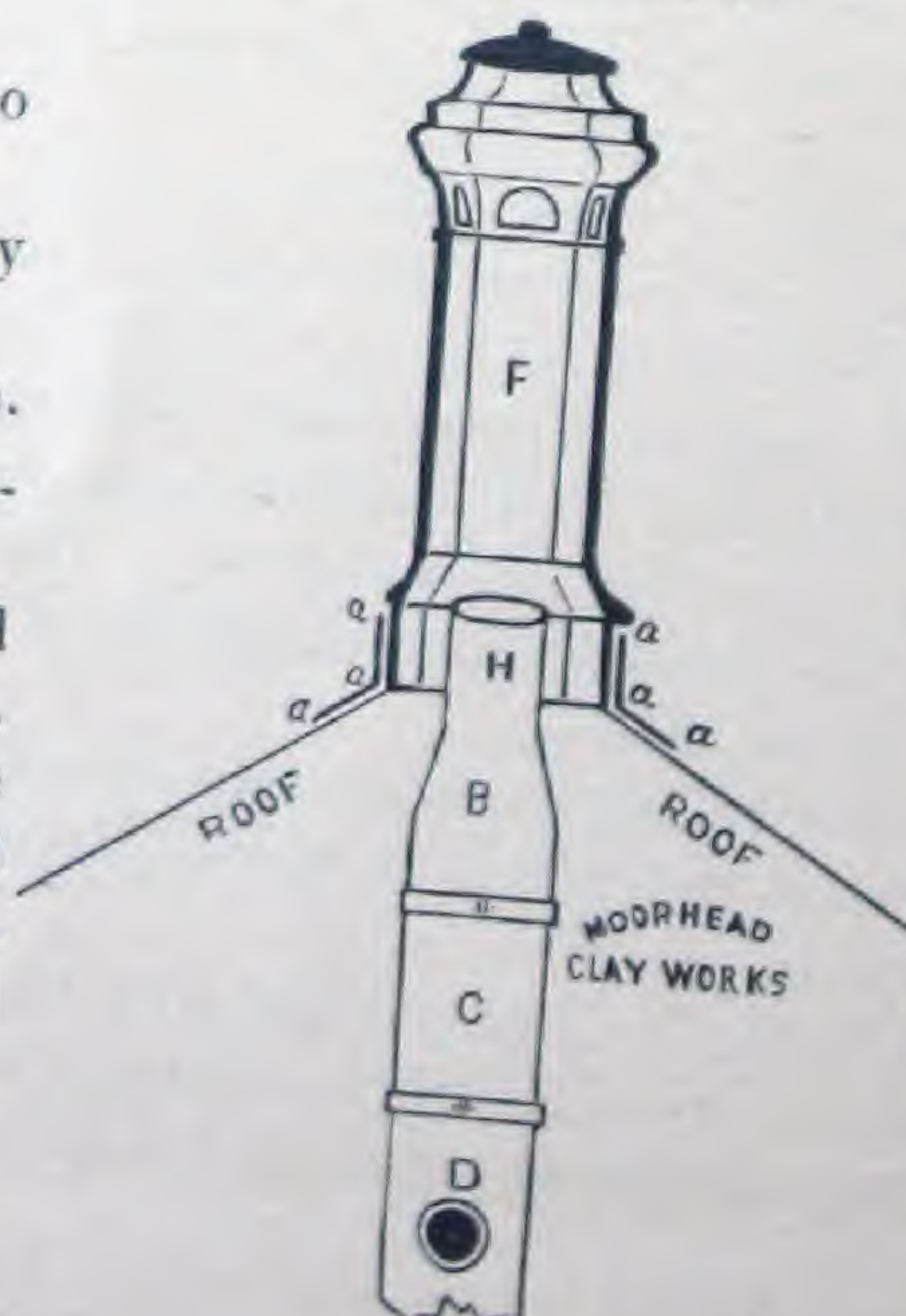
If the chimney has not been already built, then we strongly urge that instead of constructing the old fashioned, ponderous, bulky and dangerous brick or stone chimney, that you erect it entirely of our light, compact and fire proof Terra-Cotta Flues. (For the advantages of which, see on page marked "Terra-Cotta Flues.")

TO SET THESE CHIMNEY TOPS ON OUR TERRA-COTTA FLUES the following

FIGURE No. 2.

Explains Itself.

- a. a. a. Tin or felt sheathing to shed the rains.
B. H. "Top Flue" to fit in chimney top F.
C. Continuation of terra-cotta flue.
D. Stove hole in terra-cotta to receive stove pipe.
The "Oval Flues" or the "Round Pipe Flue" with socket joints, or the "Round Ribbed Pipe Flues" with Metallic Banded Joints, can be used in this manner with equal facilities, for all of which see subsequent pages.



For a plain and cheap top see page 4.

For prices of ornamental tops see Price List No. 243 (Sent on Application.)

For patterns see succeeding pages.

SHOWING THE MANNER OF GROUPING
TERRA-COTTA CHIMNEY TOPS, ON BRICK OR STONE CHIMNEYS.

PATTERN.

S. O. 76.

PATTERN.

T. O. 76.

PATTERN.

U. O. 76.



The Cuts of the above Tops are on a succeeding page.

DIRECTIONS FOR SETTING OUR ROUND PIPE TOPS,

(See Page 5.)

Used in connection with our ROUND PIPE FLUE Series of either the ROUND PIPE with Socket Joints, or the ROUND PIPE with metallic Banded Joints, or the ROUND RIBBED PIPES with metallic Banded Joints.

(Also the "Flat Oval Flues," can be here used by means of a "Round Top Flue,") for all of which see subsequent pages.

To put them up, set the lower pipe on the support A A, fill the socket of the second pipe with hydraulic cement or mortar and place it over the top of the first, and so continue up, always cleaning out the mortar on the inside of the pipes with a bunch of rags wrapped around a stick. Fit the roof up neatly under the lower end of piece E, so that it will shed the water away from the joint. This joint can also be protected by the use of felt or tin. Place the ring F, in the upper socket of E and place G over that, using cement or mortar in the sockets of both E and G. The Wind Cap H can be placed loosely in position, if needed to keep out wind and rain.

These Tops can be extended up to any height, and the whole thing put up in a short time by any ordinary workman.

Figure No. 3.

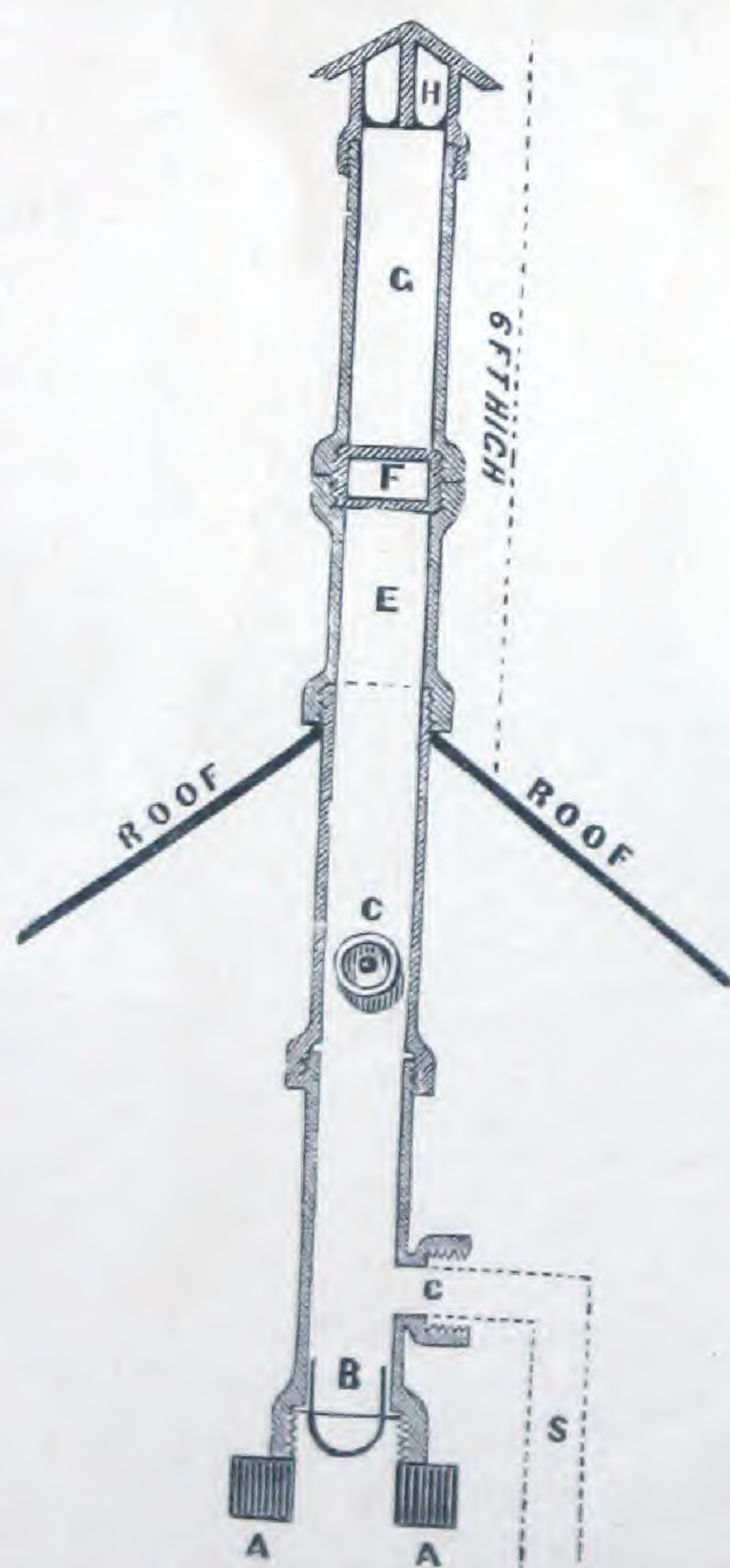


Fig 3 Represents one of these Flues constructed of our Vitrified Clay, Round Socket Pipes.

A. A. Showing beams, or any other support, braced from below or hung from above, so as to start the flue from any desired point.

B. Tin stopper to clean out dust and soot. (*removable at will.*)

C. C. Stove pipe holes of any required size.

E.F.G.H. Showing our celebrated "Round Pipe Top," see patterns, (O. R. or O. R. W.) consisting of the lower piece E, the ring F, the top pipe G, and the wind cap H, the whole forming an INCOMPARABLY CHEAP, IMPERISHABLE, SIMPLE Chimney Top.

These Flues and Tops are round, either 2, 3, 4, 5, 6, 8, 10, or 12 inches diameter, perfectly smooth and glazed.

No better draught can be had than they will furnish.

These Round Pipe Tops form for BLACKSMITH SHOPS, RAILROAD STATION HOUSES, BACK KITCHENS, FOUNDRIES, and all other places where a cheap durable flue is required, the CHEAPEST, MOST DURABLE and BEST Flue and Chimney Top in existence.

They can be put on any Chimney Top, old or new, large or small, anywhere, without scaffolding or dirt, in twenty minutes by any ordinary workman, and are INDESTRUCTIBLE by Weather or Gas.

STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA, CHIMNEY TOPS,

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

THESE ROUND OR PIPE TOPS

form the cheapest and most efficient Chimney Top in the world.

They are rapidly and easily put up or taken down and give a better draught than any other.

THEY ARE NEAT AND DURABLE.

The Bonnet marked

J. O. W.

see a succeeding page, will fit and serve as a WINDGUARD for O. R. of either 6 in. or 8 in. inside diameter of shaft.

PATTERN.

O. R. W. 42.

In two pieces.

Can be used with or without the windcap.

PATTERN.

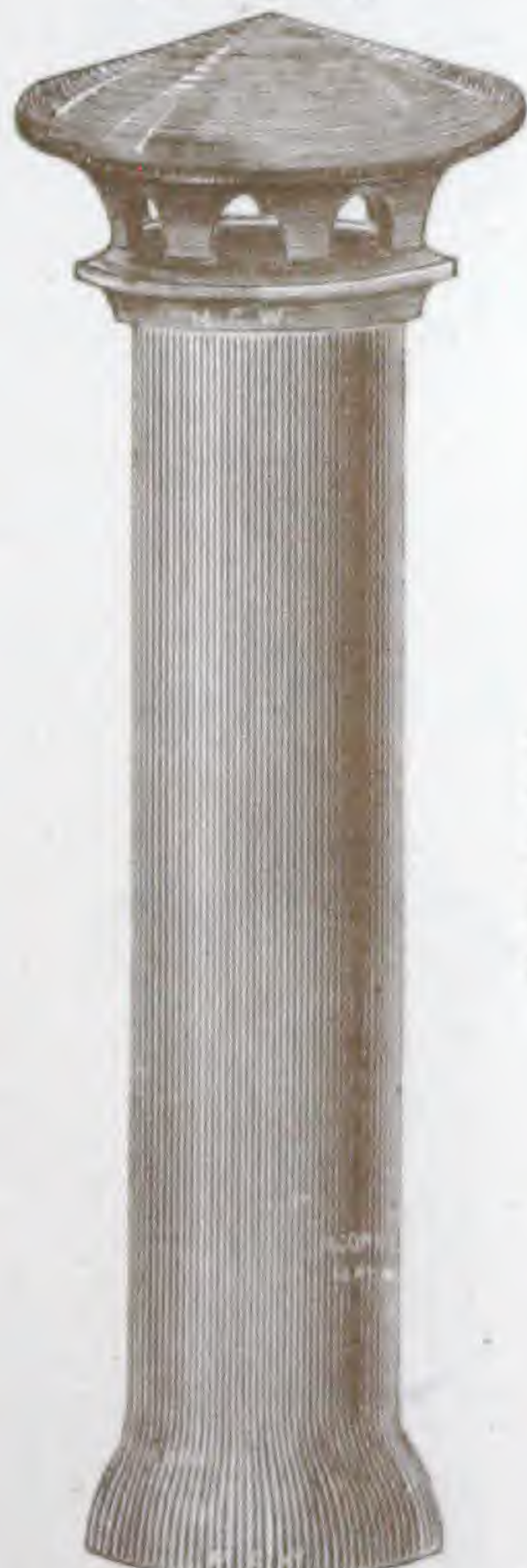
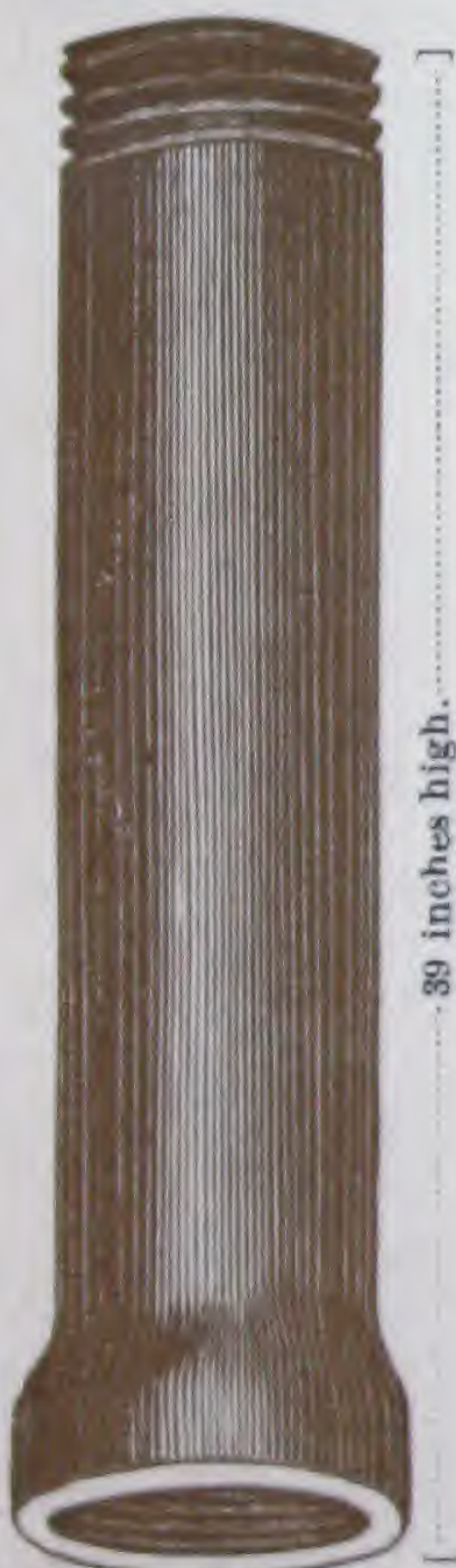
O. R. W. 73.

In four pieces.

Can be used with or without the windcap.

PATTERN.
O. R. 39.

In one piece.



BASE ROUND.

Sizes as follows:

OUTSIDE DIAMETER OF BASE	INSIDE DIAMETER OF SHAFT.	WEIGHT.
7½ inches.	4 inches.	24 lbs.
9 "	5 "	27 "
10 "	6 "	42 "
13 "	8 "	51 "
16 "	10 "	63 "
17 "	12 "	99 "

BASE ROUND.

Sizes as follows:

OUTSIDE DIAMETER OF BASE	INSIDE DIAMETER OF SHAFT.	WEIGHT.
7½ inches.	4 inches.	30 lbs.
9 "	5 "	35 "
10 "	6 "	48 "
13 "	8 "	62 "
16 "	10 "	78 "
17 "	12 "	120 "

BASE ROUND.

Sizes as follows:

OUTSIDE DIAMETER OF BASE	INSIDE DIAMETER OF SHAFT.	WEIGHT.
7½ inches.	4 inches.	60 lbs.
9 "	5 "	72 "
10 "	6 "	100 "
13 "	8 "	130 "
16 "	10 "	155 "
17 "	12 "	225 "

— SCALE OF MEASURE IS ONE INCH TO ONE FOOT. —

For prices see Price List No. 243, which will be sent free on application.

For directions for setting up these Tops, see page 4.

STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA CHIMNEY TOPS,

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

The Bonnet marked

C. O. W.

see a succeeding page, will fit and
serve as a WINDGUARD for A. O. 24,
30, or 36.

PATTERN.
A. O. 24.



BASE { Octagonal shape,
10 1/2 inches inside,
12 " outside.
Bore 9 1/4 inches. Weight 40 lbs.

24 inch high

PATTERN.
A. O. 30.



BASE { Octagonal shape,
10 inches inside,
12 inches outside.
Bore 7 1/2 in. Weight 60 lbs.

30 inch high

PATTERN.
A. O. 36.



BASE { Octagonal shape,
13 inches inside,
15 " outside.
Bore 9 inches. Weight 80 lbs.

36 inch high

PATTERN.
A. O. W. 36.



BASE { Octagonal shape,
13 inches inside,
15 " outside.
Bore 9 inches. Weight 80 lbs.

36 inch high

PATTERN.
A. O. W. 30.



BASE { Octagonal shape,
10 inches inside,
12 " outside.
Bore 7 1/2 inches. Weight 60 lbs.

30 inch high

PATTERN.
A. O. W. 24.



BASE { Octagonal shape,
10 1/2 inches inside,
12 " outside.
Bore 9 1/4 inches. Weight 40 lbs.

24 inch high

— SCALE OF MEASURE IS ONE INCH TO ONE FOOT. —

For prices, see Price List No. 245, which will be sent free on application.

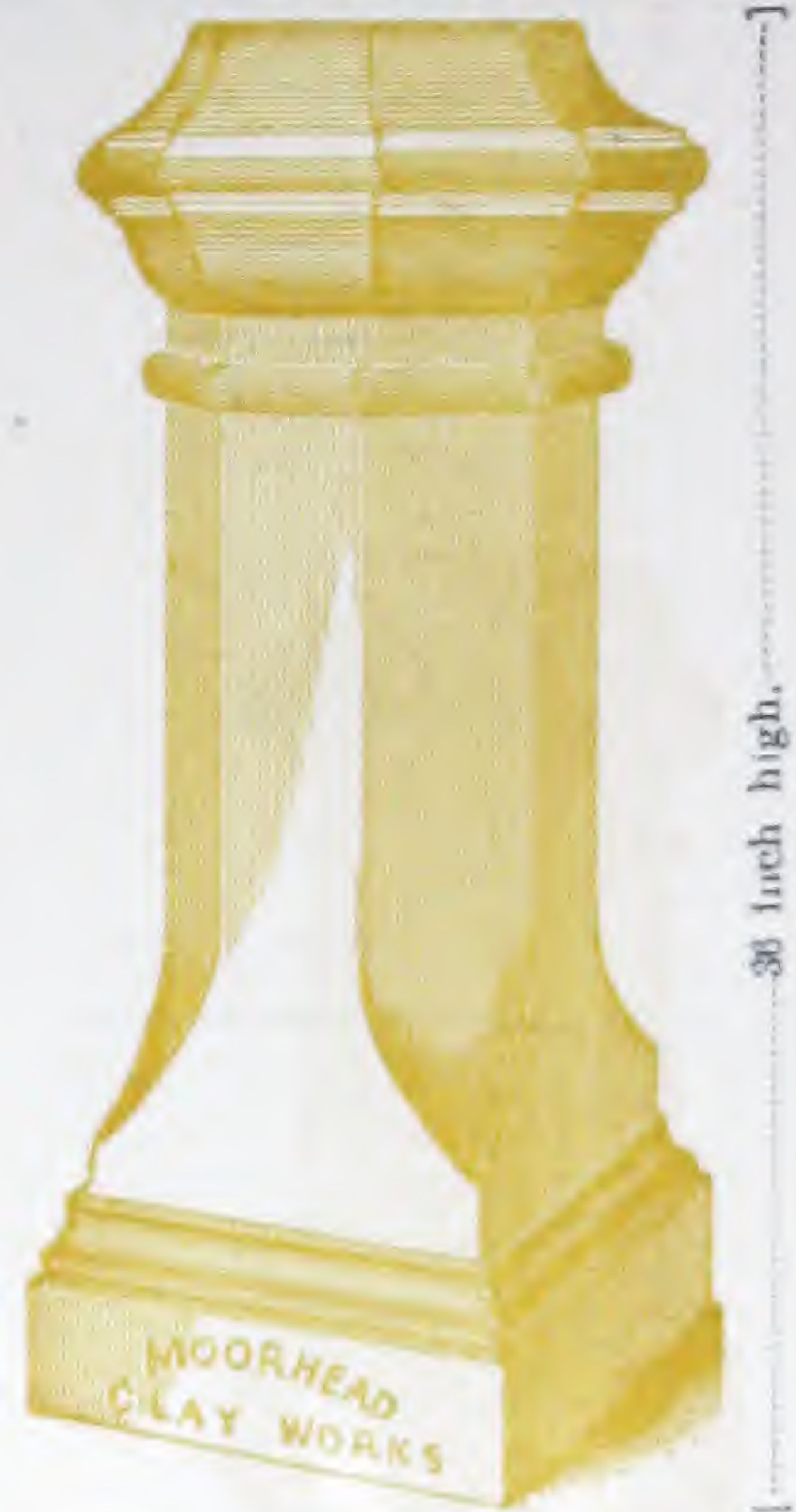
For Directions for setting up these Tops see page 2.

STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA CHIMNEY TOPS,

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

PATTERN.

A. S. 36.



BASE { Square in shape,
11 1/2 inches inside,
13 1/2 " outside.
Bore 8 inches. Weight 75 lbs.

PATTERN.

A. S. 30.



BASE { Square in shape,
10 1/2 inches inside,
12 " outside.
Bore 5 1/2 inches. Weight 50 lbs.

PATTERN.

A. S. 24.



BASE { Square in shape,
9 1/4 inches inside,
11 1/4 " outside.
Bore 6 inches. Weight 50 lbs.

The Bonnet marked
C. O. W.
see on a succeeding page will fit and
serve as a WINDGUARD for A. S. 36.

PATTERN.

A. S. W. 36.



BASE { Square in shape,
11 1/2 inches inside,
13 1/2 " outside,
Bore 8 inches. Weight 75 lbs.

PATTERN.

A. S. W. 24.



BASE { Square in shape,
9 1/4 inches inside,
11 1/4 " outside,
Bore 6 inches. Weight 50 lbs.

— SCALE OF MEASURE IS ONE INCH TO ONE FOOT. —

For prices, see Price List No. 243, which will be sent free on application.

For Directions for setting up these Tops see page 2.

STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA CHIMNEY TOPS, MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

The Bonnet marked

H. O. W.

see on a succeeding page, will fit and form
a WINDGUARD for either of these three
Patterns.

PATTERN
B. S. 36.



36 inch high.

BASE { Square in shape,
13 inches inside,
15 " outside.
Bore 10 inches. Weight 120 lbs.

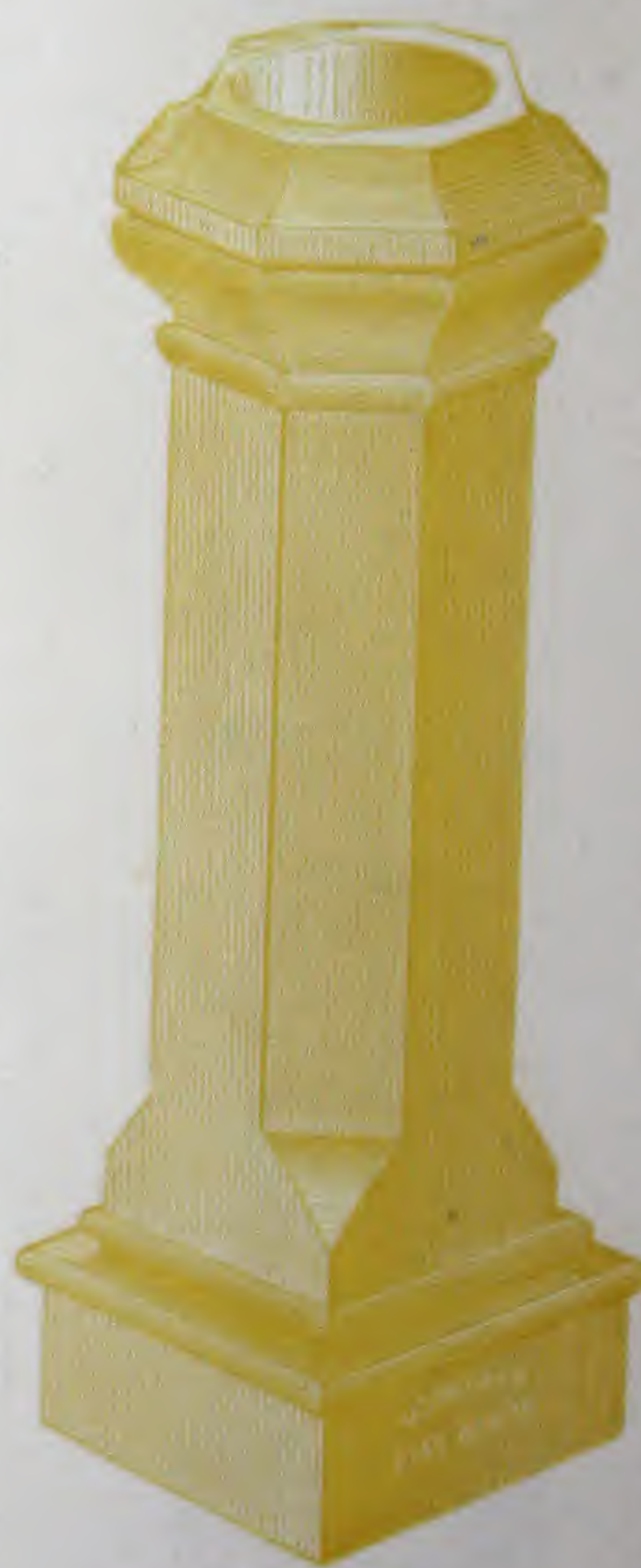
PATTERN.
B. S. 42.



42 inch high.

BASE { Square in shape,
13 inches inside,
15 " outside.
Bore 10 inches. Weight 135 lbs.

PATTERN.
B. S. 48.



48 inch high.

BASE { Square in shape,
13 inches inside,
15 " outside.
Bore 10 inches. Weight 150 lbs.

—SCALE OF MEASURE IS ONE INCH TO ONE FOOT.—
For prices, see Price List No. 343, which will be sent free on application.

For Directions for setting up these Tops see page 2.

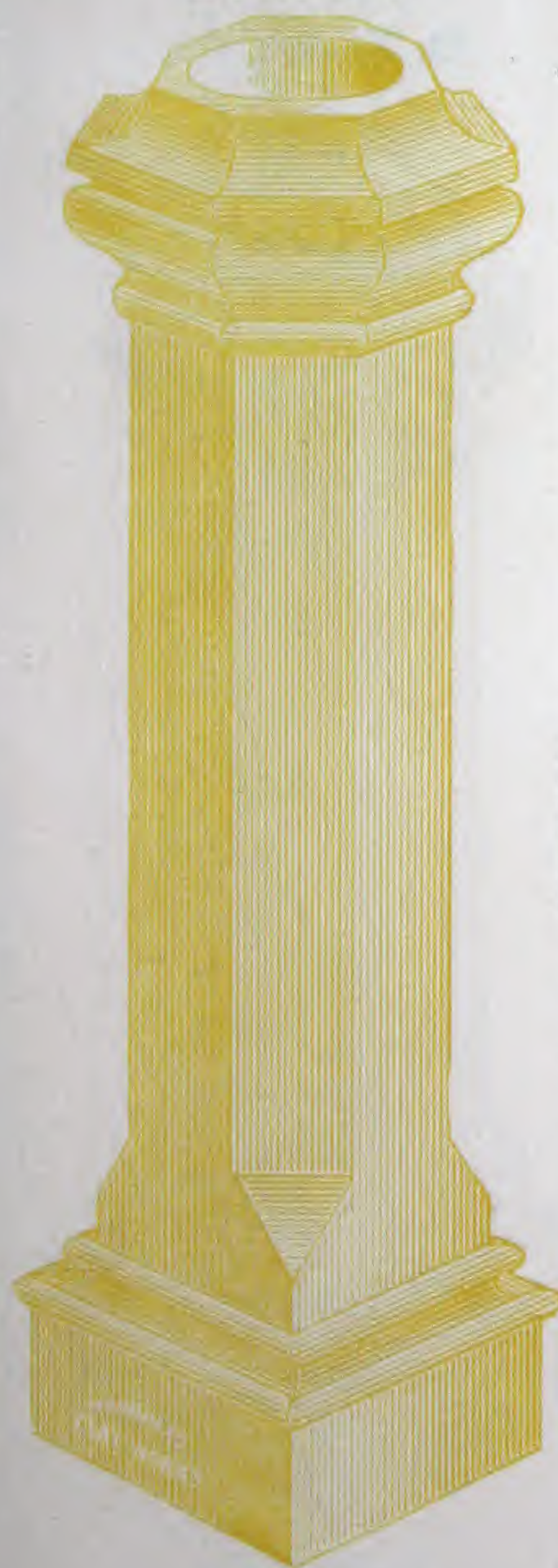
STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA CHIMNEY TOPS, MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

The Bonnet marked

G. O. W.

see on a succeeding page, will fit and form
a WINDGUARD for either of these three
Patterns.

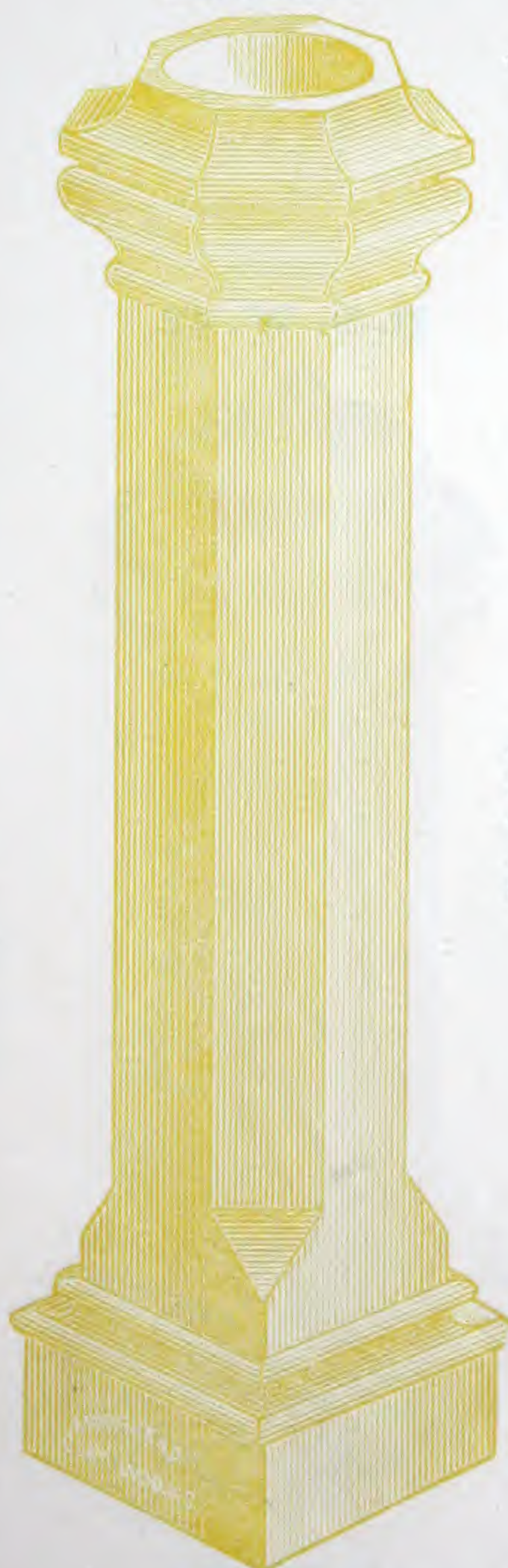
PATTERN.
B. S. 54.



54 inch high.

BASE { Square in shape,
13 inches inside,
15 " outside.
Bore 10 inches. Weight 175 lbs.

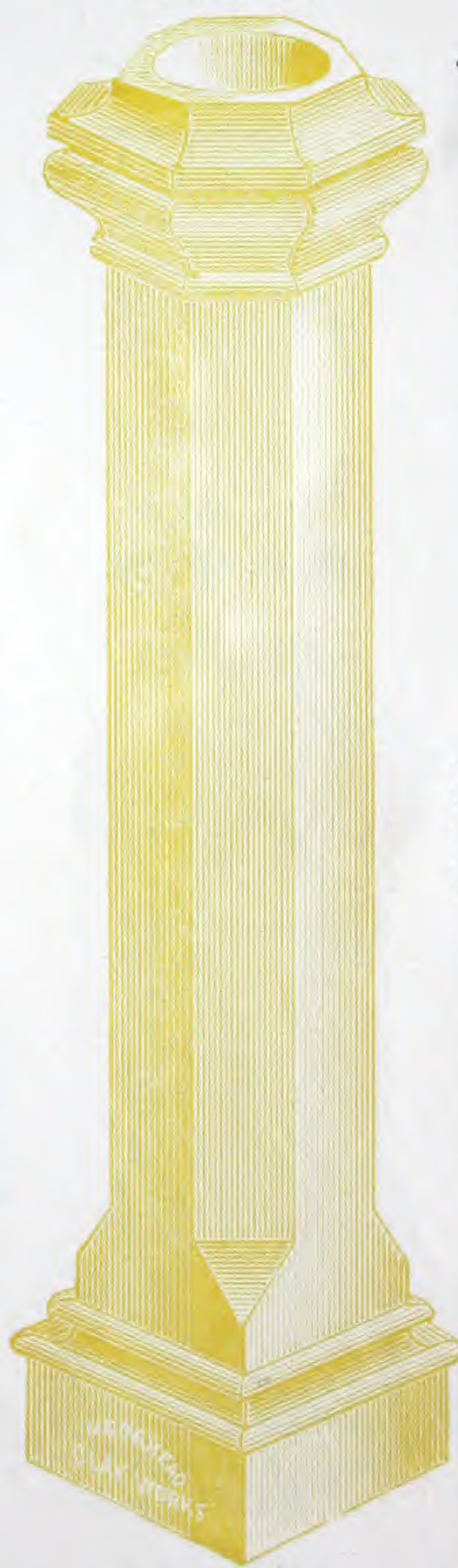
PATTERN.
B. S. 60.



60 inch high.

BASE { Square in shape,
13 inches inside,
15 " outside.
Bore 10 inches. Weight 190 lbs.

PATTERN.
B. S. 66.



66 inch high.

BASE { Square in shape,
13 inches inside,
15 " outside.
Bore 10 inches. Weight 205 lbs.

—SCALE OF MEASURE IS ONE INCH TO ONE FOOT.—

For prices, see Price List No. 243, which will be sent free on application.

For Direction for setting up these Tops see page 2.

STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA CHIMNEY TOPS,

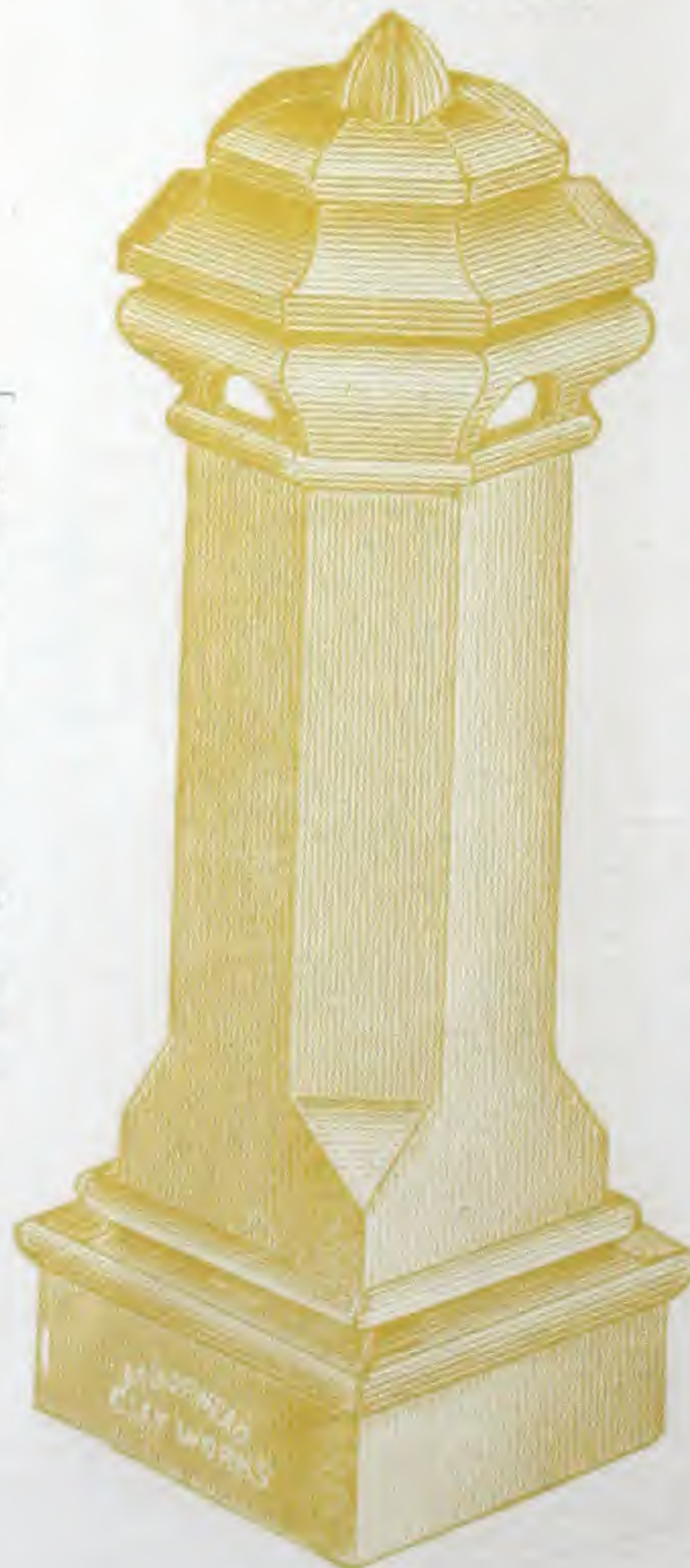
MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

PATTERN
B. S. W. 36.



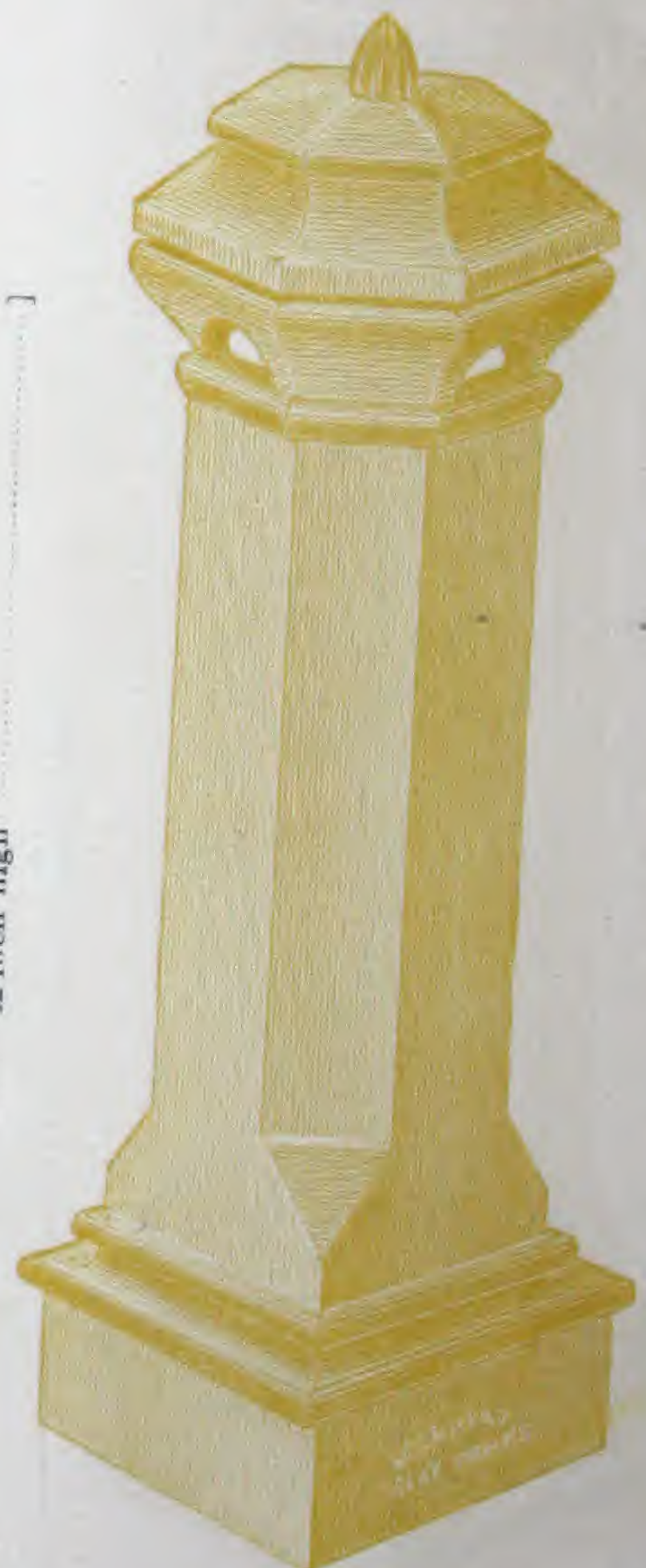
BASE { Square in shape,
13 inches inside,
15 " outside,
Bore 10 inches. Weight 120 lbs.

PATTERN.
B. S. W. 42.



BASE { Square in shape,
13 inches inside,
15 " outside,
Bore 10 inches. Weight 136 lbs.

PATTERN.
B. S. W. 48.



BASE { Square in shape,
13 inches inside,
15 " outside,
Bore 10 inches. Weight 160 lbs.

—SCALE OF MEASURE IS ONE INCH TO ONE FOOT.—
For prices see Price List No. 243, which will be sent free on application.

For Directions for setting up these Tops see page 2.

STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA, CHIMNEY TOPS,

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.



PATTERN

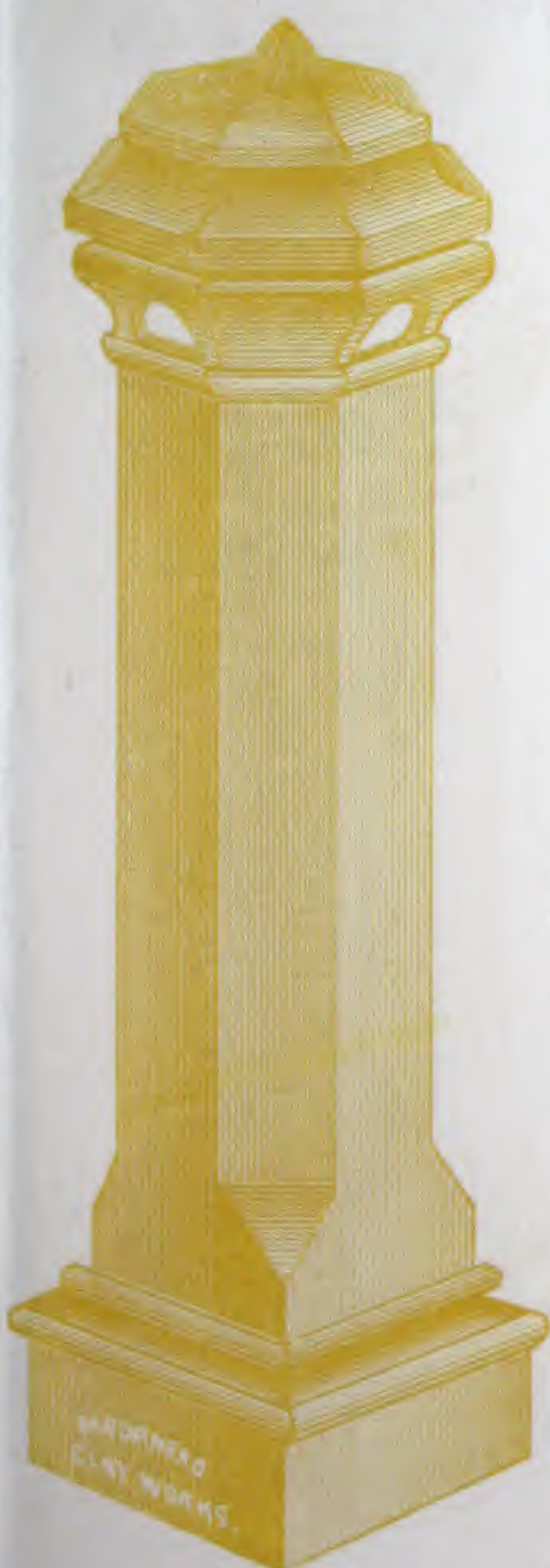
B. S. W. 66.

PATTERN

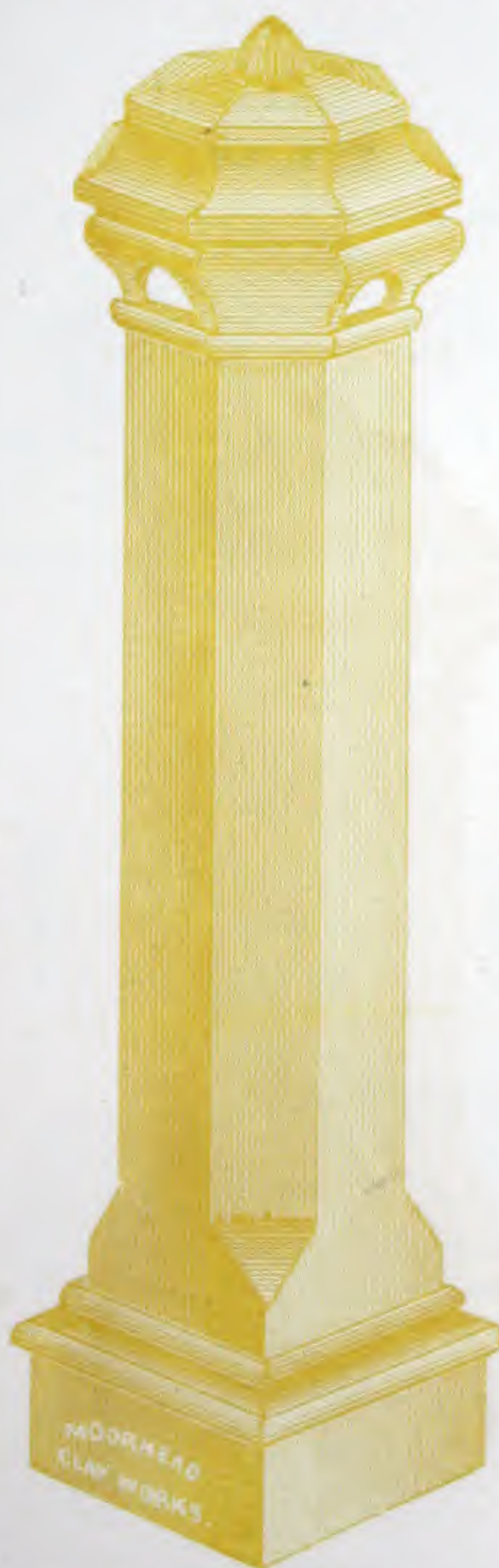
B. S. W. 60.

PATTERN

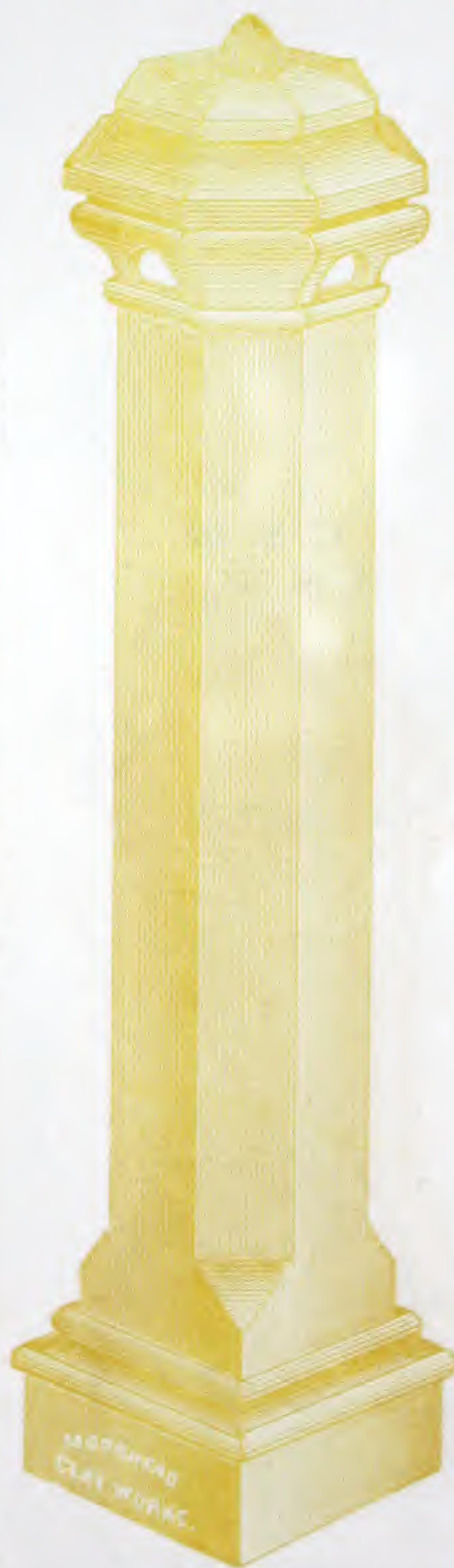
B. S. W. 54.



BASE { Square in shape.
13 inches inside,
15 " outside.
Bore 10 inches. Weight 175 lbs.



BASE { Square in shape,
13 inches inside,
15 " outside.
Bore 10 inches. Weight 190 lbs.



BASE { Square in shape,
13 inches inside,
15 " outside.
Bore 10 inches. Weight 205 lbs.

—SCALE OF MEASURE IS ONE INCH TO ONE FOOT.—

For prices see Price List No. 243, which will be sent free on application.

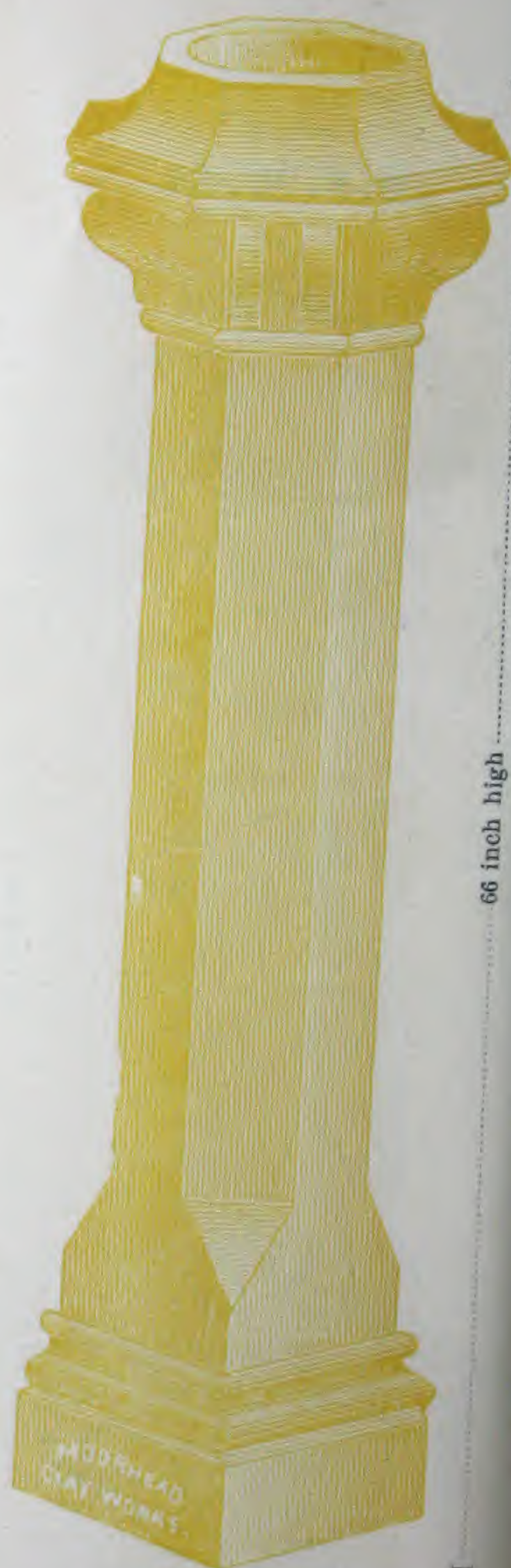
For Directions for setting up these Tops see page 2.

STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA CHIMNEY TOPS,

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

PATTERN.

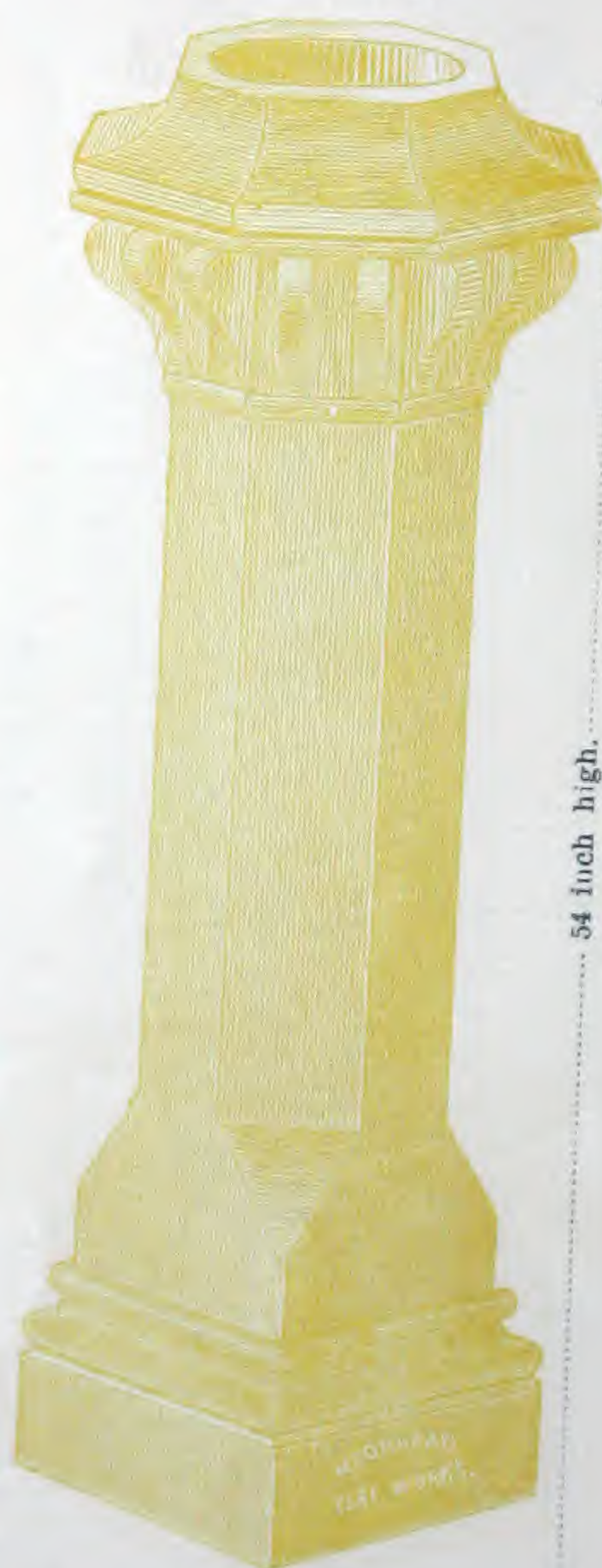
C. S. 66.



66 inch high

PATTERN.

C. S. 54.



54 inch high

PATTERN.

C. S. 42.



42 inch high

BASE { Square in shape,
12 1/2 inches inside,
14 1/2 " outside,
Bore 11 inches, Weight 130 lbs.

BASE { Square in shape,
12 1/2 inches inside,
14 1/2 " outside,
Bore 11 inches, Weight 170 lbs.

BASE { Square in shape,
12 1/2 inches inside,
14 1/2 " outside,
Bore 11 inches, Weight 190 lbs.

— SCALE OF MEASURE IS ONE INCH TO ONE FOOT. —
For prices, see Price List No. 243, which will be sent free on application.

For Directions for setting up these Tops see page 2.

STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA CHIMNEY TOPS,

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

PATTERN.

G. S. 36.



BASE { Square in shape,
11 inches inside,
13 " outside.
Bore $7\frac{3}{4}$ inches. Weight 85 lbs.

PATTERN.

L. O. 36.



BASE { Octagonal in shape,
 $11\frac{1}{2}$ inches inside,
 $13\frac{1}{2}$ " outside.
Bore 7 inches. Weight 75 lbs.

PATTERN.

H. S.

SUITABLE FOR MANSARD ROOFS.



We have this TOP of the following sizes.

BASE { Square in Shape,
14 inches inside,
16 " outside.
Height 24 in. Bore of top 9x9 in. Weight 75 lbs.

BASE { Square in shape,
16 inches inside,
18 " outside.
Height 24 in. Bore of top $11\frac{1}{4} \times 11\frac{1}{4}$ in. Wt. 96 lbs.

BASE { Square in shape,
16x22 inches inside,
18x24 " outside.
Height 24 in. Bore of top $10 \times 15\frac{1}{4}$ in. Weight 180 lbs

PATTERN.

I. S. 36.



BASE { Square in shape,
11 inches inside,
13 " outside.
Bore $6\frac{3}{4}$ inches Weight 100 lbs.

PATTERN.

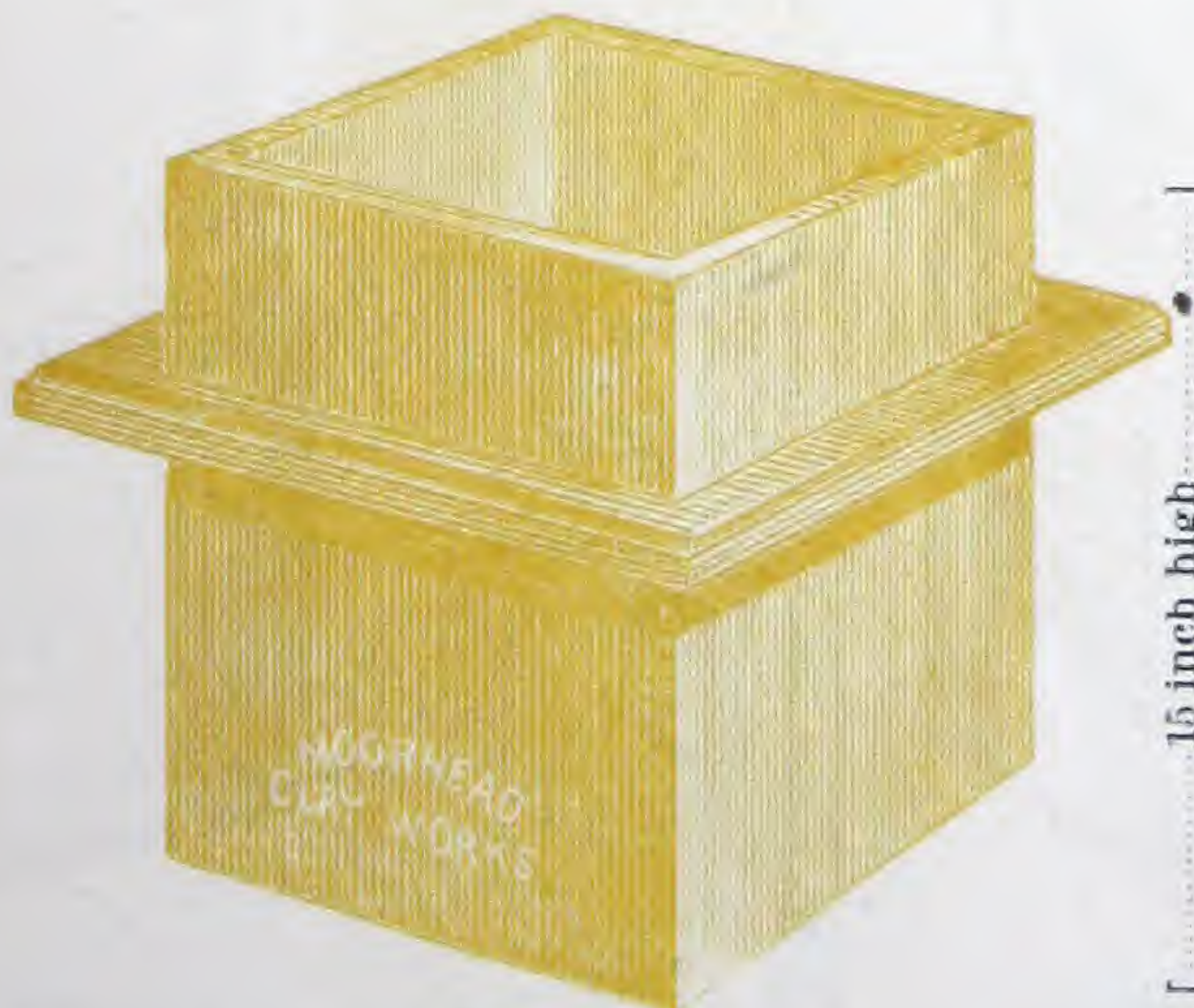
A. O. D. 30.



BASE { Octagonal in shape,
 $10\frac{1}{2}$ inches inside,
12 " outside,
Bore 6 inches. Weight 65 lbs.

PATTERN.

M. S.



BASE { Square in shape,
 $9\frac{1}{2}$ inches inside,
11 " outside.
Bore $9\frac{1}{2}$ inches. Weight 55 lbs.

— SCALE OF MEASURE IS ONE INCH TO ONE FOOT. —

For prices, see Price List No. 243, which will be sent free on application.

For Directions for setting up these Tops see page 2.

STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA CHIMNEY TOPS,

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

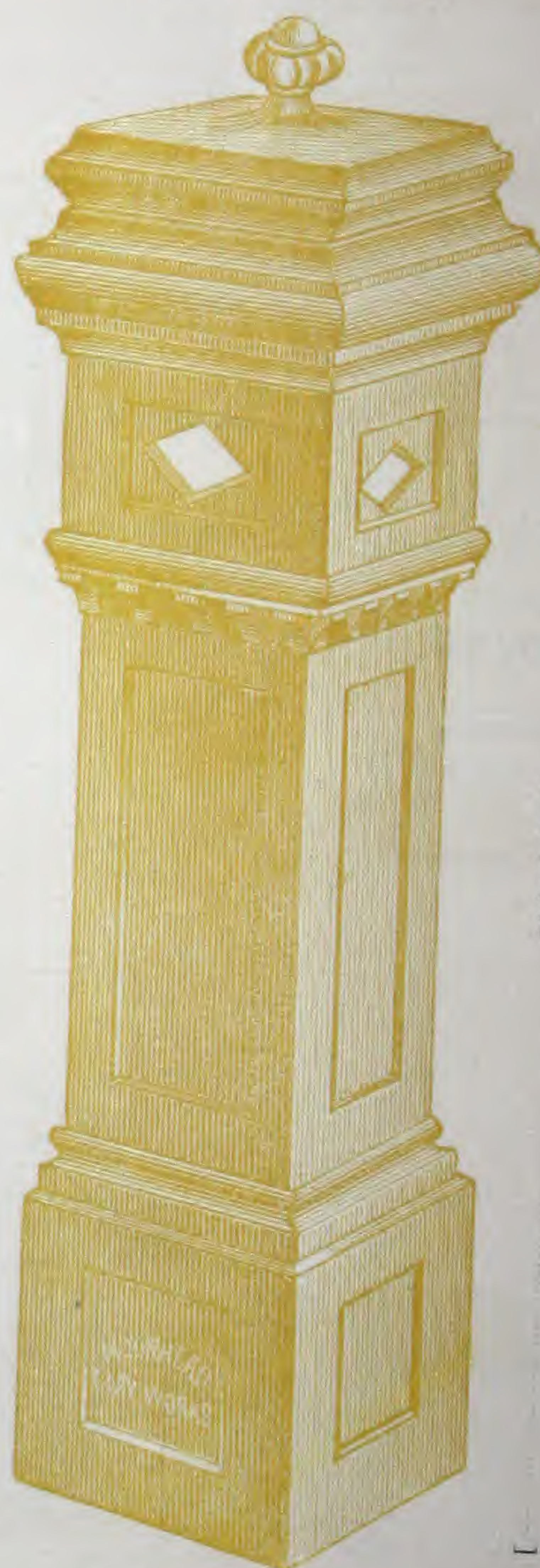
PATTERN.

K. S. 54.

54 inch high

BASE { Square in shape,
9 1/4 inches inside,
11 1/4 " outside,
Bore 5 inches. Weight 110 lbs.

PATTERN.

K. S. W. 54.

54 inch high

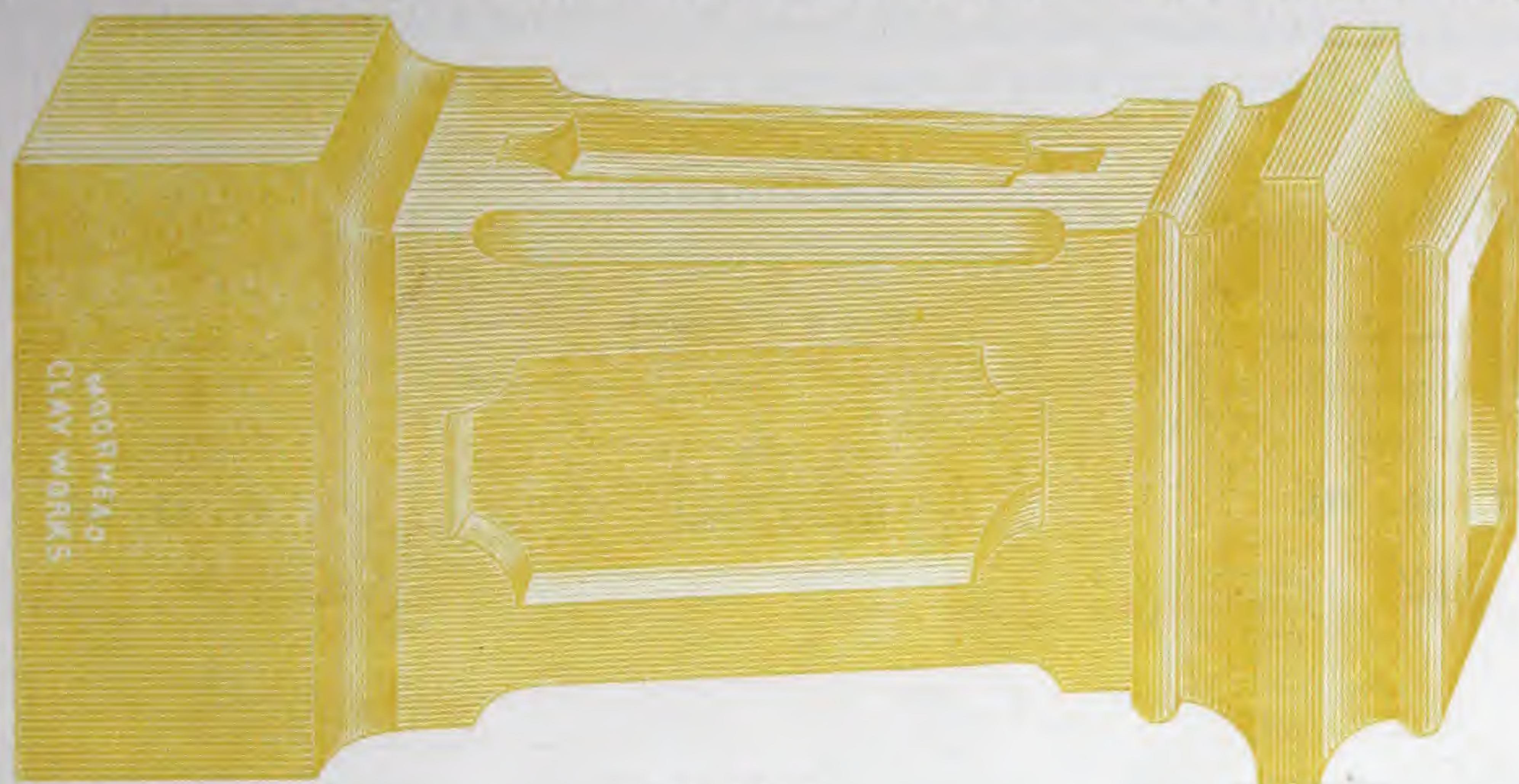
BASE { Square in shape,
9 1/4 inches inside,
11 1/4 " outside,
Bore 5 inches. Weight 110 lbs.

—SCALE OF MEASURE IS ONE INCH TO ONE FOOT.—
For prices see Price List No. 243, which will be sent free on application.

For Directions for setting up these Tops see page 2.

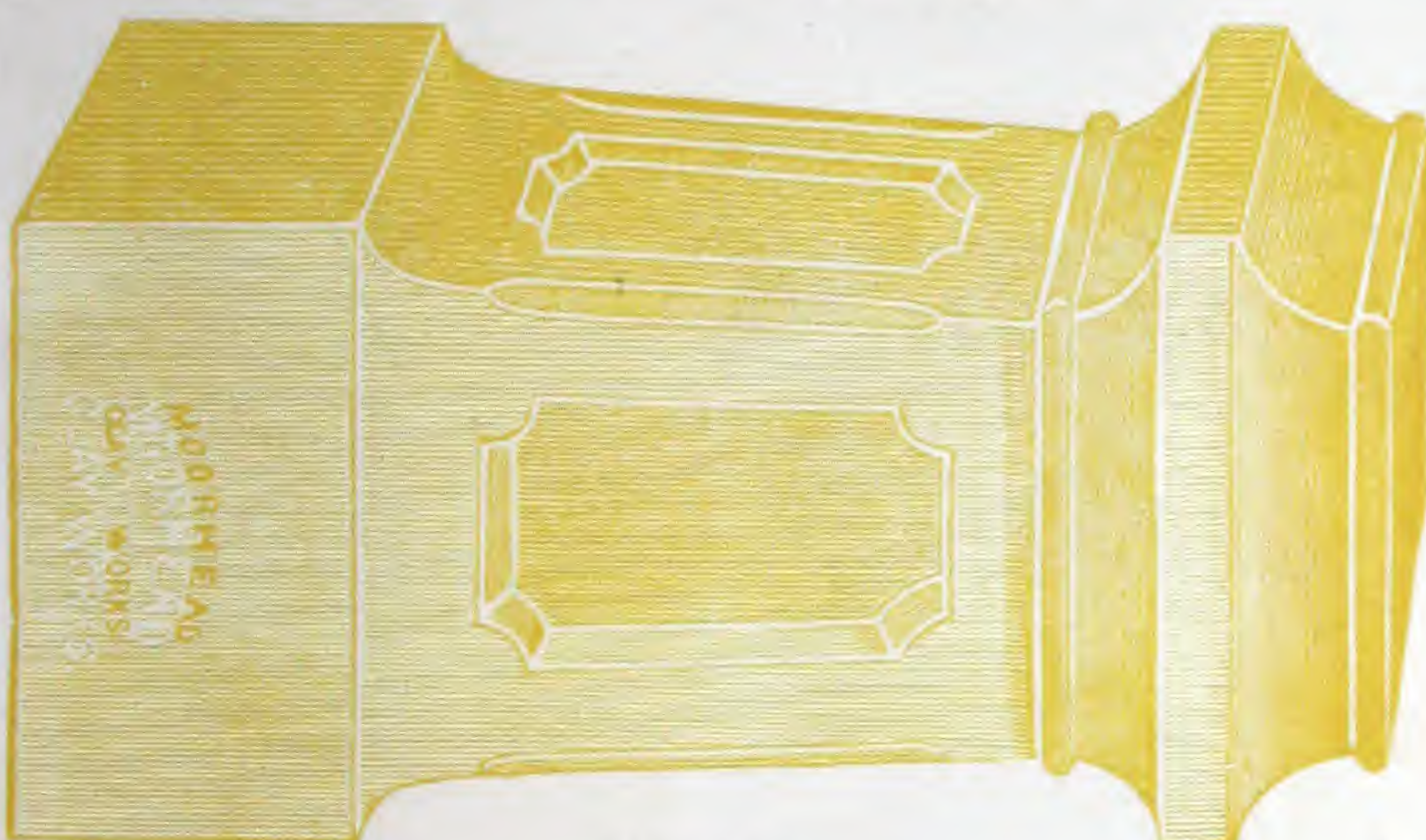
STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA CHIMNEY TOPS, MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

PATTERN.
R. R. 54.



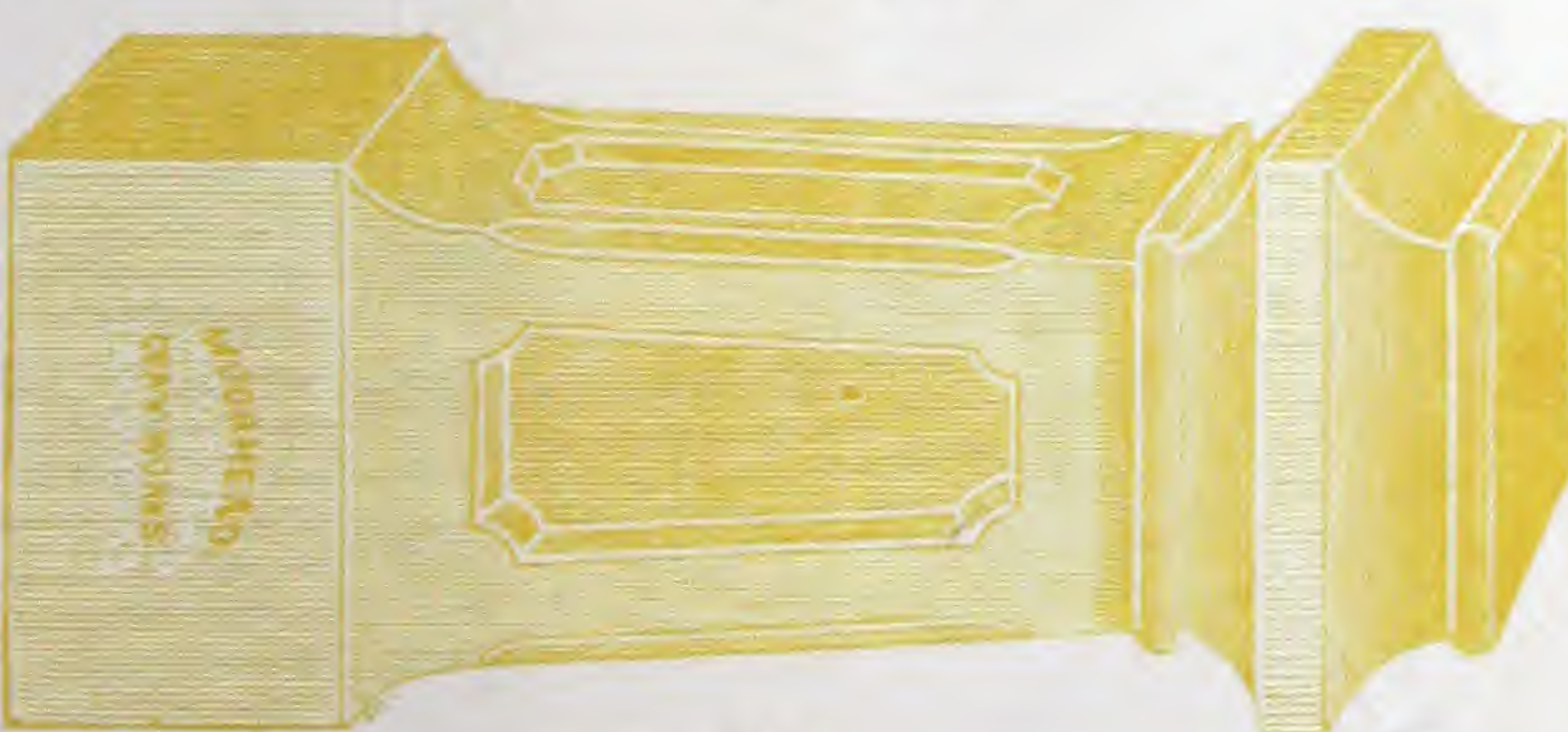
54 inch high

PATTERN.
R. R. 42.



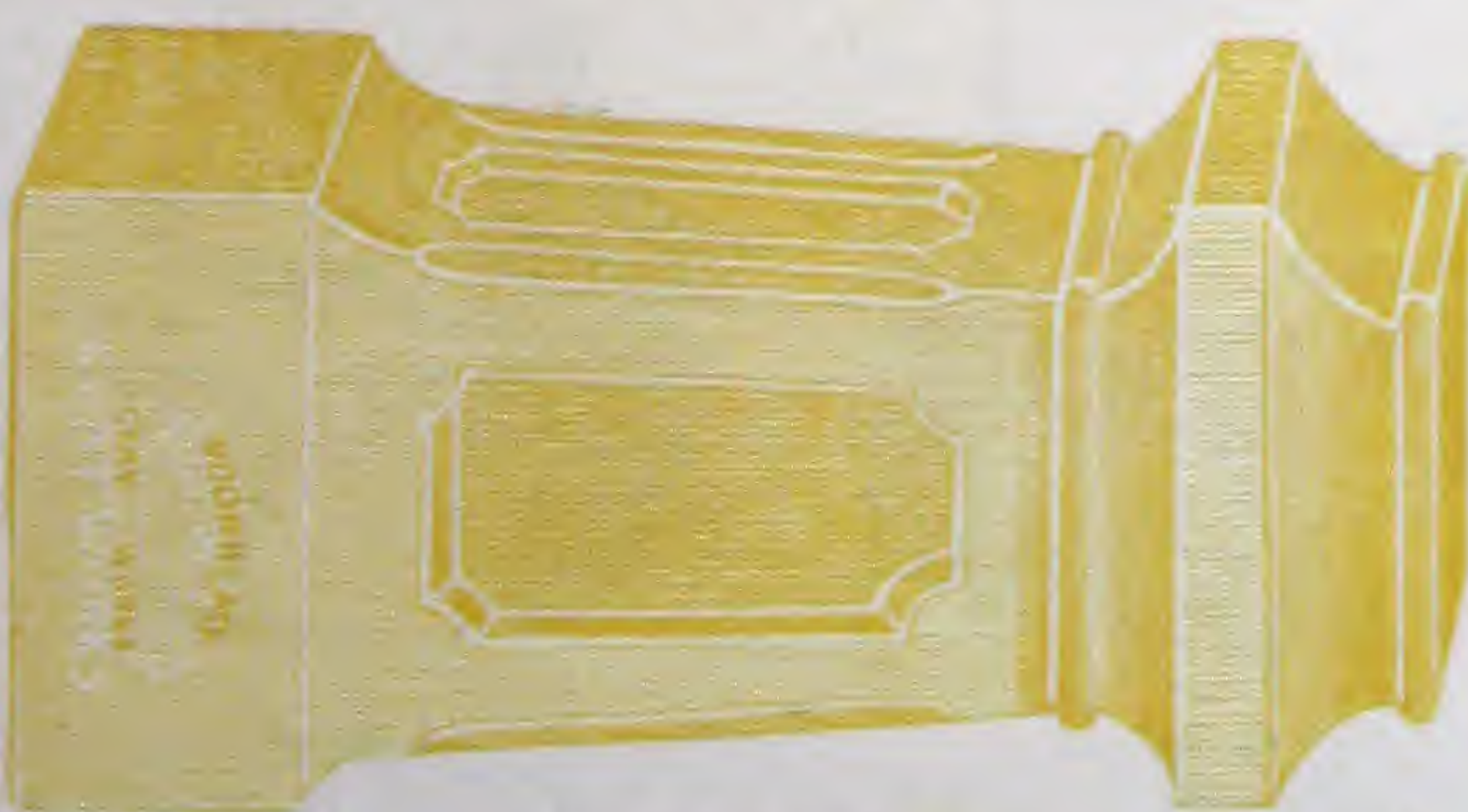
42 inch high

PATTERN.
R. R. 36.



36 inch high

PATTERN.
R. R. 30.



30 inch high

The Hood,
I. R. W.
(See page 25) Will fit over
and form a WINDGUARD
for either of these four Tops.

— SCALE OF MEASURE IS ONE INCH TO ONE FOOT. —

For directions for setting up these Tops, see page 2.

BASE { Rectangular in shape,
14x20 inches inside,
16 1/2 x 22 1/2 " outside,
Bore 9x14 1/2 inches, Weight 275 lbs.

BASE { Rectangular in shape,
11 1/2 x 16 1/2 inches inside,
13 1/2 x 18 1/2 " outside,
Bore 7 1/2 x 12 3/4 inches, Weight 150 lbs.

BASE { Rectangular in Shape,
8 1/2 x 12 1/2 inches inside,
10 1/2 x 14 1/2 " outside,
Bore 5 3/4 x 9 1/2 inches, Weight 118 lbs.

BASE { Rectangular in shape,
8 1/2 x 12 inches inside,
10 1/2 x 14 " outside,
Bore 5 3/4 x 9 1/2 inches, Weight 80 lbs.

For prices see Price List No. 243, which will be sent free on application.

STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA CHIMNEY TOPS,

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

These are three of the most effective Chimney Tops in existence for Architectural beauty and can be used either separately or in groups (as on page 3) to produce a variety of effects.

WINDGUARDS

can be made to order for these
TOPS if desired.

PATTERN

T. O. 76.



76 inch high

BASE { Octagonal in shape,
17½ inches inside,
20 " outside.
Bore 12½ inches. Weight 334 lbs.

PATTERN.

S. O. 76.



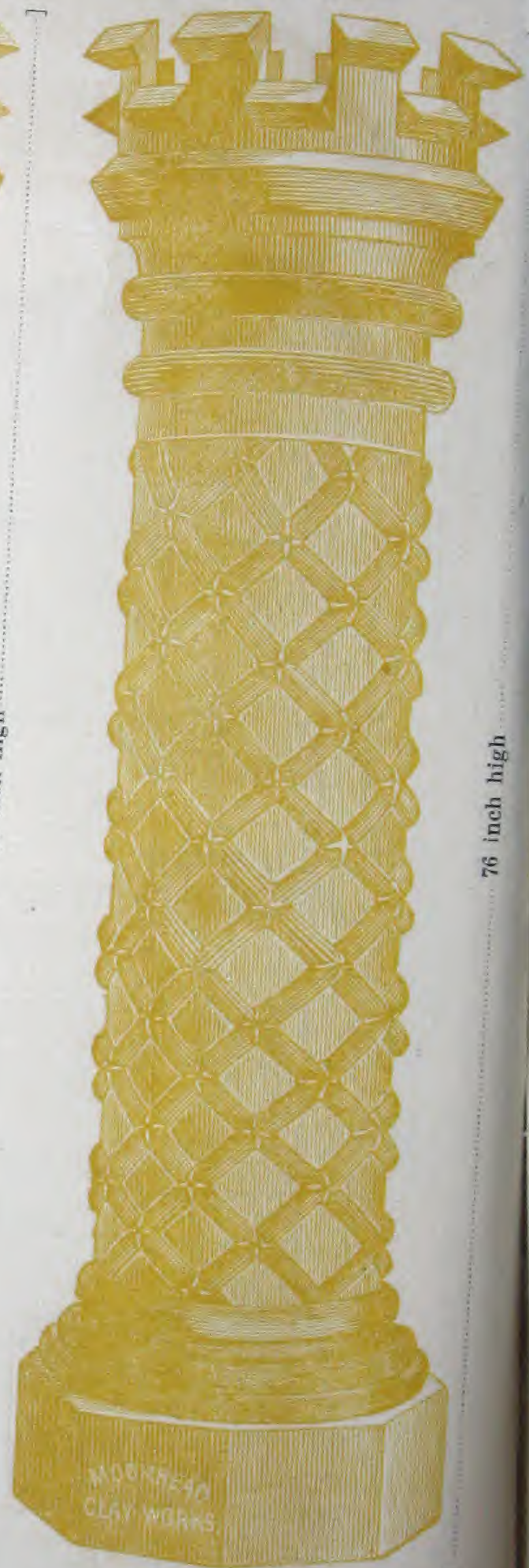
76 inch high

BASE { Octagonal in shape,
17½ inches inside,
20 " outside.
Bore 12½ inches. Weight 338 lbs.

—SCALE OF MEASURE IS ONE INCH TO ONE FOOT.—

PATTERN.

U. O. 76.



76 inch high

BASE { Octagonal in shape,
17½ inches inside,
20 " outside.
Bore 12½ inches. Weight 334 lbs.

For Directions for setting up these Tops see page 2.

For prices see Price List No. 243, which will be sent free on application.
 — SCALE OF MEASURE IS ONE INCH TO ONE FOOT —
 For directions for setting up these Tops, see pag

BASE { Octagonal in shape.
 48 inches inside.
 54 inches outside.
 Bore of Shaft 40 inches.
 Weight 4,000 lbs.



**STANDARD PATTERNS AND SIZES OF
VITRIFIED CLAY OR TERRA-COTTA
CHIMNEY TOPS,**

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

PATTERN.

F. O. W. 192.

[.....62 inches across the Cornice.]



2 inches, high.....]

STANDARD PATTERNS AND SIZES OF VITRIFIED CLAY OR TERRA-COTTA, WIND-CAPS, BONNETS, HOODS AND WINDGUARDS,

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

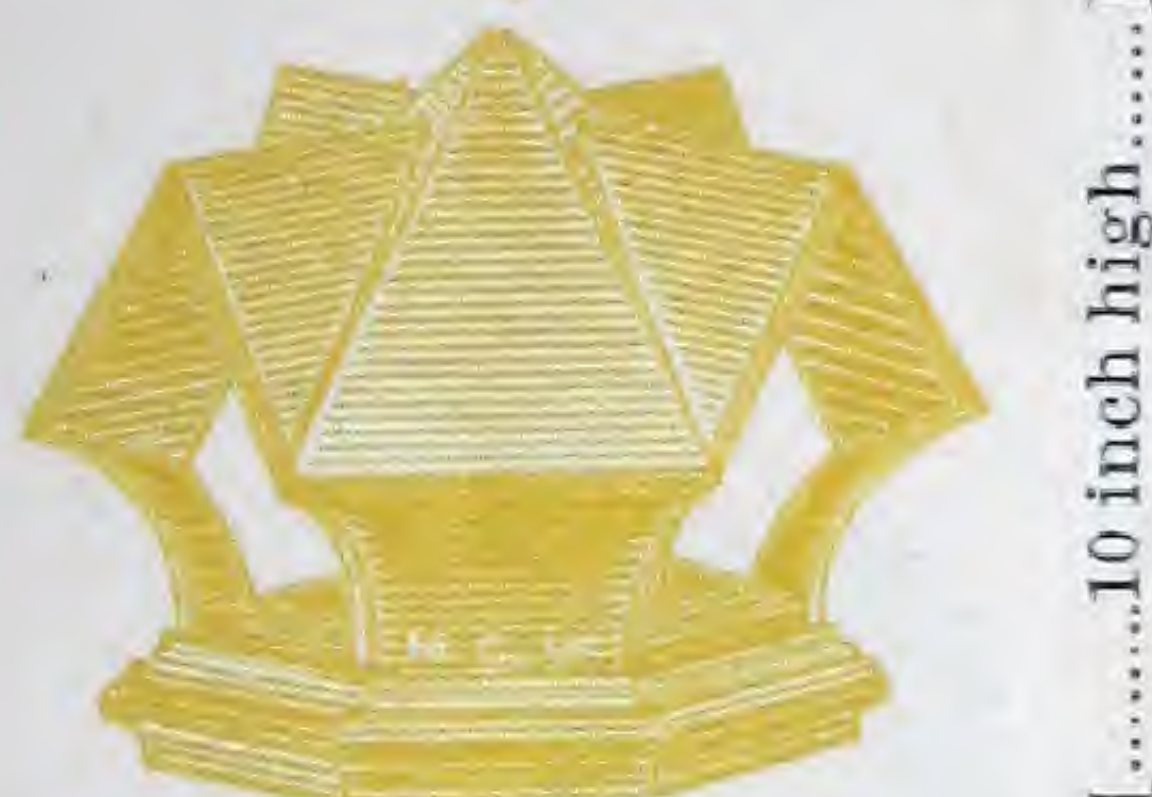
And used in connection with our Chimney Tops or with chimneys of brick or other material, to resist dampness, down draughts and the annoyance of birds.

PATTERN
No. 82.
Used as a finale piece
to fit on the Bonnet
G. O. W.



[.....11½ inch high.....]
Weight 11 lbs.

BONNET
PATTERN
G. O. W.



[.....10 inch high.....]

BASE { Octagonal in shape,
7½ inches inside,
10½ " outside.
Weight 15 lbs.

BONNET

PATTERN

H. O. W.



[.....17 inch high.....]

BASE { Octagonal in shape,
9¾ inches inside,
13½ " outside,
Bore 7½ inches. Weight 30 lbs.

This Bonnet,

G. O. W.

Can be used with or without Peak No. 82 and forms
a WINDGUARD for Chimney Tops, A. O. 24,
A. O. 30, and A. O. 36. (See page 6.)

This Bonnet,

H. O. W.

Will fit and forms a WINDGUARD for Chimney
Tops, B. S. 36, 42, 48, 54, 60, and 66. (See
pages 8 and 9.)

WINDCAP

PATTERN

O. R. W.



Height 6 to 12 inches
according to bore.

BASE { Round in shape,
inside, } DIAMETER
outside } AND WEIGHT
are according to the pipe it is
to fit.

This Windcap,

O. R. W.

Is made in sizes to fit and form a WINDGUARD
for our "Round Pipe Tops," O.R. of either 4, 5, 6, 8,
10, 12, or 15 in. inside diameter of shaft, see page 5

HOOD

PATTERN

I. R. W.



[.....9½ inch high.....] for R. R. 30 or 36
[.....11 inch high.....] for R. R. 42,
[.....13 inch high.....] for R. R. 54.

BASE—Rectangular in shape and of the
following dimensions,

13x8½	outside	Weight 15 lbs. (to fit R. R. 30 or 36.
17x12	"	31 " " R. R. 42
19x14	"	51 " " R. R. 54

This Hood,

I. R. W.

Will fit and form a WINDGUARD for Chimney
Tops R. R. (See page 15.)

—SCALE OF MEASURE IS ONE INCH TO ONE FOOT.—

For prices see Price List No. 243, which will be sent free on application.

For Directions for setting up these Tops see page 2.

WINDGUARDS ARE CONTINUED ON NEXT PAGE.

CONTINUED FROM PAGE 19.

WINDGUARD

PATTERN

D. R. W. 18x22.

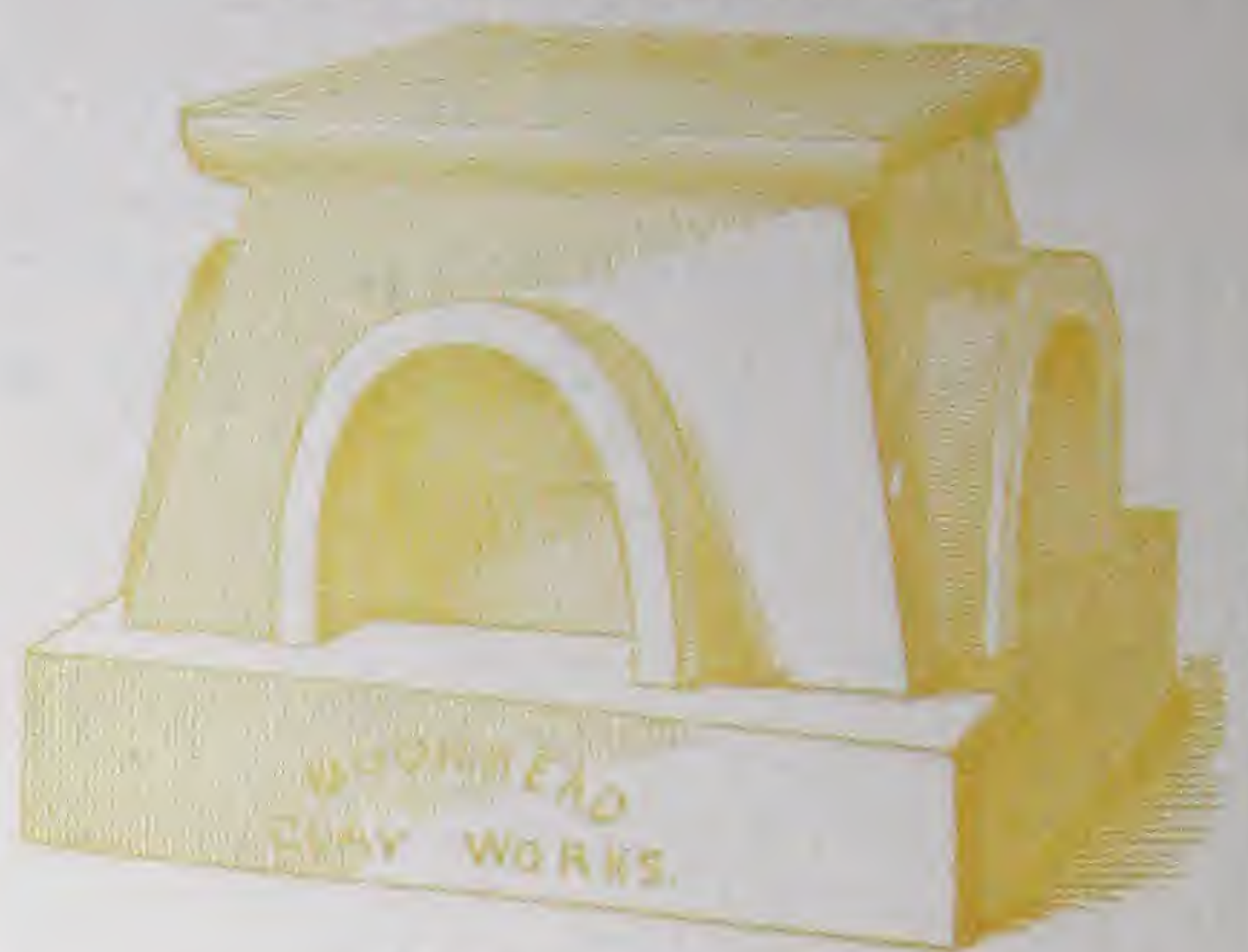
BASE { Rectangular in shape,
16x20 inches inside
18x22 " outside.
Weight 95 lbs.

[.....18 1/4 inch high.....]

WINDGUARDS D. R. W. are used to set on the tops
of brick or stone chimneys.
The Cap or Lid is Loose.

WINDGUARD

PATTERN

D. R. W. 18x18.

BASE { Square in shape,
16x16 inches inside,
18x18 " outside,
Weight 85 lbs.

[.....18 inch high.....]

BONNET

PATTERN.

J. O. W.

[.....30 inch.....]

Base of { Round in shape, and
Centre { in two sizes 6 or 8 in. WEIGHT { for 6 in. 53 lbs.
Flue { inside diameter. " 8 " 58 "

[.....15 inch high.....]

Its mode of action is based on the fact that which
ever way the wind moves it can but pass across,
or up or down and through the two side flues and
thus create a vacuum and consequent accelerated
draught in the central flue. No rain or down
draught can ever reach the central flue.

This Bonnet,

J. O. W.

Fits over and forms a WINDGUARD for our
Round Pipe Tops O. R. of either 6 or 8 inch inside
diameter of shaft. And can also be used on all the
sizes and patterns of A. O.—A. S. and B. S.

WINDGUARD Pattern N. S. W.



[.....20 inch high.....]

BASE { Square in shape,
29x29 inches outside,
Flue opening 10 1/2 x 10 1/2 inches,
Lateral openings 9 1/2 x 7 1/2 inches,
Weight 229 lbs.

Other sizes made to order to fit any size Chimney or Flue.

This WINDGUARD was invented and perfected by our prominent fellow citizen WM. WELSH, who refusing to patent it, generously dedi-
cated it to his fellow citizens to alleviate the miseries attendant upon foul and smoky chimneys and defective ventilators.

The lid or top, and wings, and base, are so adjusted that no matter which way the wind moves it is gathered in a volumn and violently
forced through the latter openings and across the flue, forming a vacuum and consequently a powerfully accelerated upward draught in this flue.

No rain or down draught can ever reach the flue.

We consider it the most SIMPLE, EFFECTIVE, CHEAP and DURABLE WINDGUARD and VENTILATOR in existence.

—SCALE OF MEASURE IS ONE INCH TO ONE FOOT.—

For prices see Price List No. 243, which will be sent free on application.

For Directions for setting up these Tops see page 2.


TERRA-COTTA CHIMNEY FLUES,

MANUFACTURED BY THE
MOORHEAD CLAY WORKS,
PHILADELPHIA.

These flues are manufactured of the very best terra-cotta clay and were introduced for, and are used in all classes of buildings as the very best substitute for the old fashioned, ponderous, bulky and unsafe brick or stone chimney for the purpose of

CONVEYING SMOKE, HOT AND COLD AIR, VENTILATION, ETC., ETC.

We claim for these flues the following advantages.

1st. **THEY IMPROVE THE DRAUGHT.** It has been proved that hot air and other gases, when left free, always tend to a centre, assuming a spherical form when undisturbed, but when forced up a flue or chimney necessarily assuming a cylindrical shape, thus  Now a brick or stone flue being angular, it follows that at these angles cold air, which coming in contact with this cylindrical column of hot air or gas ascending the flue by the difference of gravity, must tend to reduce its temperature, until by the time it has reached the top, it has but little more ascending force than the cold air laying like a lid on the top of the chimney, and being unable to lift this lid, "smoky rooms" result. Our flues have none of these corners, but from their round or oval shape the ascending column of smoke, heat or gas completely expels the idle and damaging cold air, and meets with no impediment in its ascension.

The smoothness and uniform internal surface of these flues also greatly aids the draught, as there is but one joint in every 36 inches of height, and this joint can be made perfectly smooth and tight, whilst in brick or stone work there is either a crevice or projecting rib of mortar at every 24 inches of height, each one of which materially obstructs and impedes the ascending smoke or heat and causes swirls or eddies, and catches and retains the soot and dirt. Sometimes brick or stone chimneys are "parged" (*or coated on the inside with a thin sheet of mortar*) to correct this fault, but it is only a temporary remedy, as the coal gas and weather soon removes the parging.

Many brick or stone chimneys are also ineffective because, in erecting or repairing them, unskillful workmen have "choked" or narrowed their area, especially in angles or corners. This defect is rendered impossible in our Flues, as will be seen from their structure.

2d. **SAFETY.** As before said, these Flues require joining only at every 18 or 36 inches, and such joint can be made perfectly tight and safe by our "socket" or "band" joint, whilst brick chimneys have a joint at every 24 inches, secured only by mortar, and any one of such innumerable joints is liable at any time to be opened for the escape of sparks by the expansion or contraction caused by heat and cold, or by shocks or jars; or by the settling of foundations a brick chimney is frequently cracked open from top to bottom,—such an accident would not injure our Flues.

Again, it is published by every city fire marshal, that a large proportion of conflagrations is caused by "defective flues," among which defects the most usual is that the builder allows the wooden joist to project through the bricks into the interior of the chimney. From this one cause many million dollars' worth of property is destroyed in this country every year. Our Flues rigidly prevent the possibility of such defects.

Again, coal gas readily eats holes through bricks, mortar or metal, and allows sparks to escape, whilst Terra Cotta is the only thing which will resist such agent. It is for this reason that our Flues are often used to line brick or stone chimneys in the best structures, without reference to their other qualities.

3d. **ECONOMY IN SPACE.**—Our 4½x13 oval flues occupy but 59 square inches of base, and can readily be concealed or enclosed in a frame partition wall or a wall of brick or stone, and needs no breasting out,—whilst a brick flue of equal internal area will require at least 286 square inches of base, *or nearly five times that of Terra Cotta.*

If the design is to combine smoke and ventilation flues in the same stack, this advantage becomes still more apparent, for a terra-cotta round flue, with banded joints, of 6 in. diameter, (*which by actual proof gave a stronger draught than a 9x9 inch brick flue,*) can be set inside of a 15 inch flue of the same kind, leaving a space of 3½ inches all around for ventilation draught, and the whole base area required is but 226 square inches, whilst a 9x9 brick flue inside of a ventilating flue giving the same power of draught will require over 2,000 square inches of base, *or over nine times as much as Terra Cotta.* How many finely-proportioned rooms and well-proportioned walls are ruined by the ugly chimney breast of brick work?

4th. **LESS WEIGHT OF MATERIAL.**—Our 4½x13 in. oval flues weigh but 14 lbs., or 6 in. round

flue 16 lbs. to the foot in height of the chimney, and can be started from any floor or any ordinary support, whilst a brick flue of equal capacity weighs at least 125 lbs., or an excess of 11,000 lbs. in a 100 foot stack, and necessitates starting in the ground on good foundations.

5th. FACILITY AND RAPIDITY OF ERECTION.—Each of the sections of our Flues being light, one man can erect the chimney in very little time, without the dirt, annoyance, scaffolding, &c., consequent in handling bricks.

6th. FACILITY OF REMOVAL.—From the same cause as in the preceding paragraph these flues can be, without dirt, noise or scaffold, quickly removed. This is an important point, when we consider how often, in alterations of houses, we have had to regret that a chimney has been built just where it is not wanted.

7th. FACILITY OF CLEANSING.—Our Flues, being smooth inside, catch very little dust or soot, and can be cleansed in *one minute* by pulling out the stopper at the bottom and allowing the dust to fall out. In bricks the dust and soot lodge, and is removed with much more difficulty.

8th. In CHEAPNESS our flues, we believe, considering all things, are far more economical than brick or stone.

It is unnecessary to compare these flues with tin or cast iron flues, as practice has shown the two latter to be more costly and more dangerous, and less durable, and their use has almost ceased. Cement Flues have been tried and abandoned,—they crack with the heat, and disintegrate with the weather.

These Terra-Cotta Flues are used to great advantage for the following purposes

- 1st. For conducting smoke (*as in chimneys.*)
- 2nd. " " hot or cold air, *as in Hot Houses, etc.*
- 3rd. " " ventilation.
- 4th. " Combining the smoke or heat flues inside of the ventilating flue.
- 5th. For encasing metal steam or heat pipes, for the purpose of safety to surrounding wood-work, and for preventing loss of heat or steam in such pipes.
- 6th. For constructing Flues underground, as in Rolling Mills, Potteries, etc. *We formerly had great trouble with our kiln flues, built of fire brick. They were continually cracking and leaking cold air. Several years ago, we put in our Terra-Cotta Flues, and have had no repairs and no trouble since.*
- 7th. For building Boiler Stacks and other chimneys, without the use of any other material than brick or stone for foundations. At our own works, we have one 30 inch Terra-Cotta Pipe Stack, 60 feet high and one 40 feet high; and from our experience we assert, that better and quicker work can be had from a 30 inch pipe stack than from an eight foot square brick stack. This arises from their cylindrical shape and smooth surface.

The pipes, being comparatively light and in 3 foot sections, can be erected by common labor, and very rapidly and without much scaffolding, and need very light stay wires.

They can be easily removed, without damage or loss of value, and used elsewhere. An abandoned brick chimney is not worth removing.

We have these Flues of several different shapes, viz :

1st. "Round Pipe Flues, with socket joints," which are used for horizontal flues or vertical stacks, where the stack stands free and there is sufficient space for the projecting socket, which requires about $4\frac{1}{2}$ inches more than the bore of the flue,—thus a 6 inch flue requires $10\frac{1}{2}$ inches diameter of base area. These are either glazed or unglazed. For sizes and shapes, and for directions how to use, see succeeding pages.



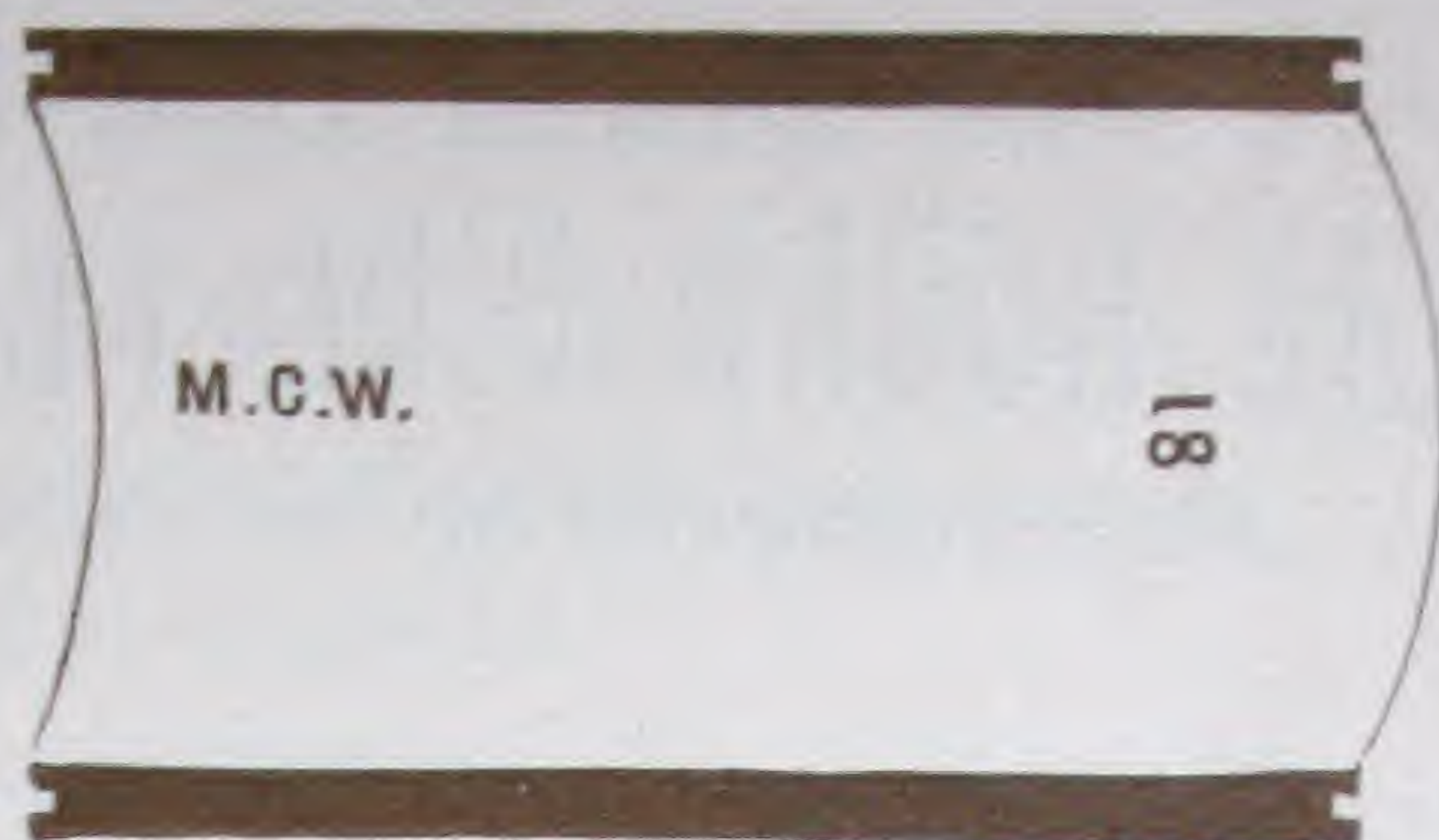
2d. "Round Pipe Flues, with or without metallic-banded joints," which are used for horizontal flues or vertical stacks, where the stack stands free and there is not sufficient space for the projecting socket. These are glazed, but can be made unglazed to order. These can also be used inside of a larger pipe, so as to combine smoke flue and ventilation flue, and are also used as the outside pipe for the same. For sizes and shapes, and for directions how to use, see succeeding pages.



3rd. "Round Ribbed Pipe Flues, with metallic banded joints," which are used for the same purposes as the Round Pipe Flues with metallic banded joints, and are especially valuable in Hot-houses for heating flues, as the projecting rib forms a deep cup for the reception of a heavy bed of fire-clay or mortar, to prevent the escape of any gas or smoke. They are unglazed. For shapes and sizes, and for directions how to use, see succeeding pages.



4th. "Round Pipe Flues, for Boiler or Furnace stacks," which are used for vertical chimneys of any kind, and can be furnished of any size bore—either 12, 15, 18, 21, 24, 30, 36, 42 or 48 inch bore. They are made to order, and either glazed or unglazed. For directions how to use, see succeeding pages.



5th. "Round Pipe Flues, with Flanged Joints," which are used to transmit steam as in exhaust pipes, etc. They are made to order, and can be furnished of any size of bore, 3, 4, 5, 6, 8, 10, 12, 15, 18, 21, 24, 30, 36, 42, and 48 inch, either glazed or unglazed. For directions how to use, see succeeding pages.

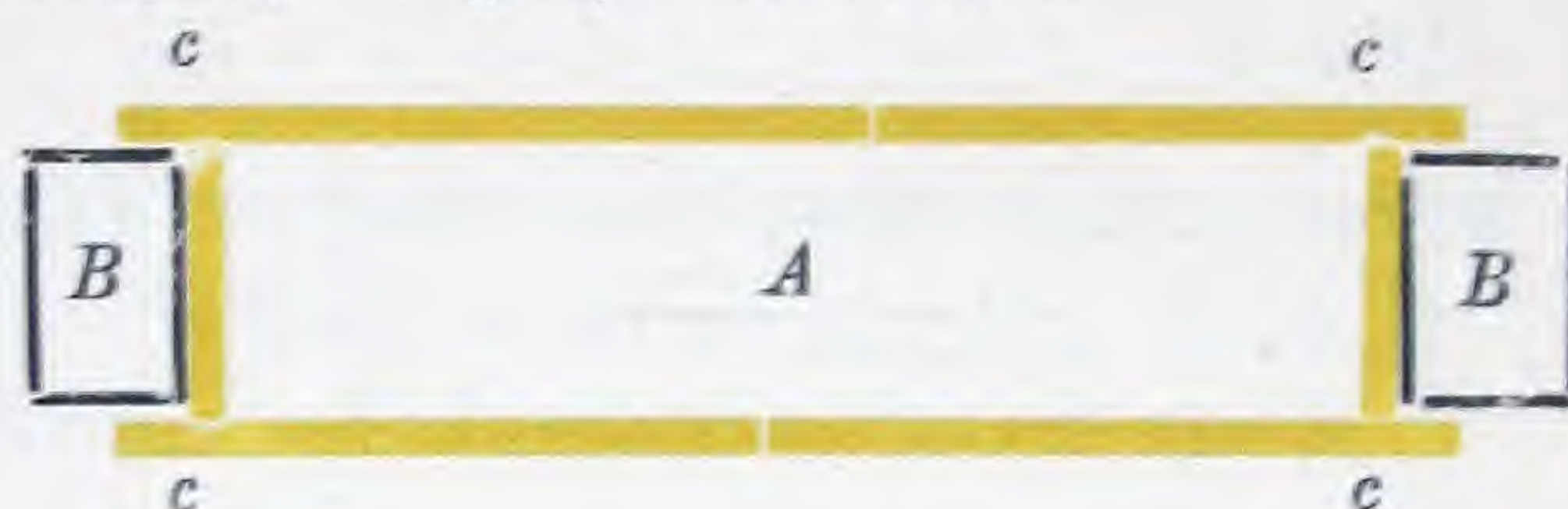


6th. We also make to order "Oblong Flues with Vertical Flanges" up the sides, to receive and clasp a 2x4 (or other size) wooden or metal upright, for the purpose of supporting the Flue and protecting the upright from fire.

This style of flue can be made to order, any size or shape, and can be used to great advantage for forming light and fireproof partition walls, to resist the spread of conflagrations.

For directions how to use, see succeeding pages.

A represents a cross section of the Terra-Cotta Flue, with the vertical flanges c-c c-c clasping the upright beams B B.



SCALE, ONE AND ONE-HALF INCH TO ONE FOOT.

7th. "Oval Flues, with Butt Joints," which are used in vertical stacks, where the flue is enclosed on at least three sides with brick or stone work, and where it is desired to save room or conceal the stack; or where there is necessity of placing two or more flues in juxtaposition in a contracted space. They are unglazed, but can be glazed to order. For shapes and sizes, and for directions how to use, see succeeding pages.



8th. "Oval Flues, with Socket Joints," which are used where the stack stands free or is enclosed in stud partitions or frame-work, and where there is sufficient space for the projecting socket, which requires $\frac{3}{4}$ inch all round. Thus, a $4\frac{1}{2} \times 13$ inch oval flue, with socket, requires about $6 \times 14\frac{1}{2}$ inch base area. They are unglazed, but can be glazed to order. For shapes and sizes, and for directions how to use, see succeeding pages.



9th. "Oval Flues, with Metallic Banded Joints," which are used for same purpose as "Oval Flues with sockets," but where there is not sufficient space to allow the projecting socket. They are unglazed, but can be glazed to order. For sizes and shapes, and directions how to use, see succeeding pages.

(Same Patterns as "Oval Flues with Butt Joints," with the addition of metallic bands around the joints, as on a succeeding page.)

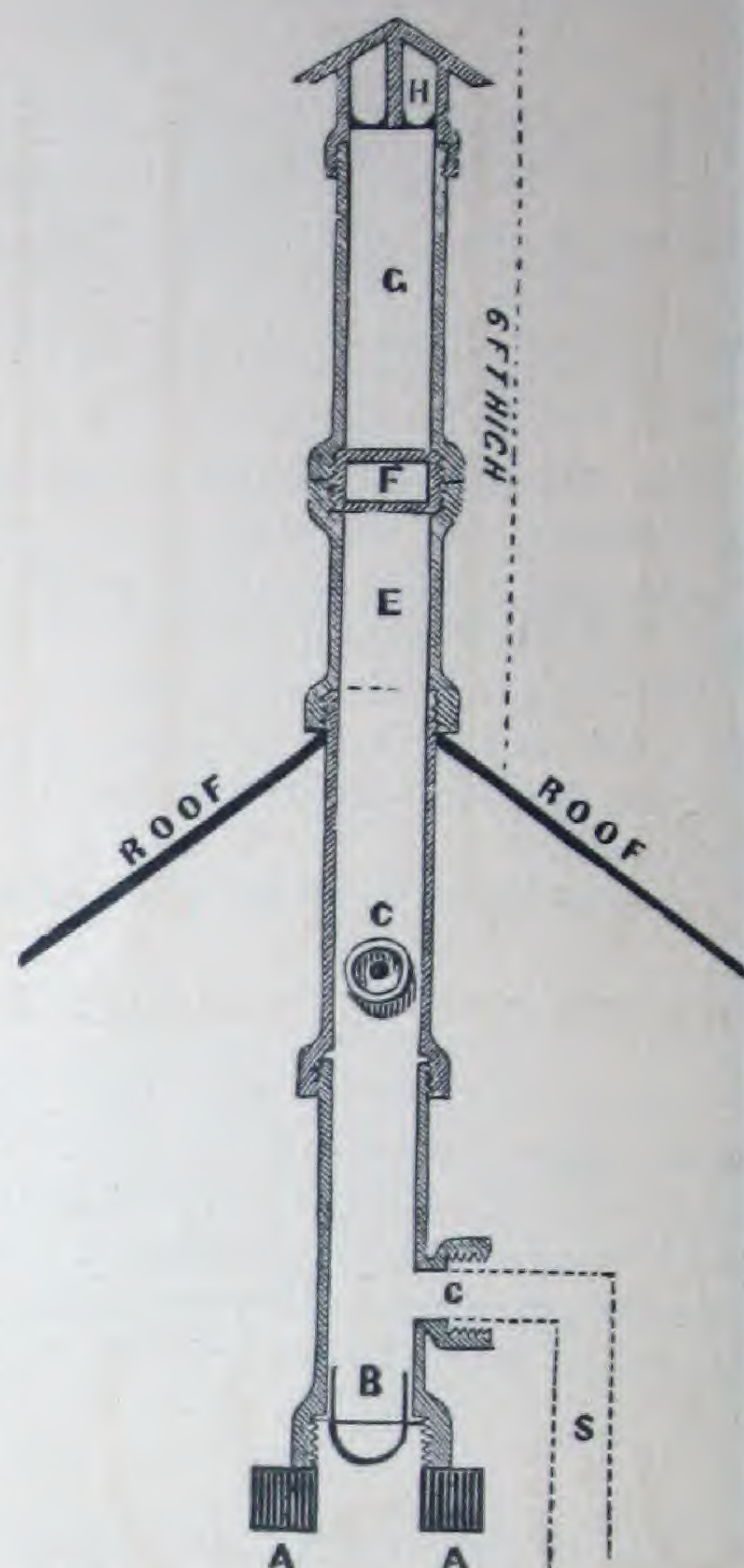
DIRECTIONS FOR SETTING THE ROUND PIPE FLUES WITH SOCKET JOINTS

Manufactured by the Moorhead Clay Works, Philadelphia.

Figure No. 4.

Referring to Fig No. 4, which shows one of these Flues in position.

- A. A. Shows beams, or any other support, braced from below or hung from above, so as to start the flue from any desired point.
- B. Metallic stopper, (*removable at will*), to clean out dust and soot.
- C. C. Stove-pipe holes of any required size to receive stove-pipe S.
- S. Metallic Stove-pipe, connecting our Terra-Cotta Flue B. C. E. F. G. with the stove or furnace.
S. can be either inserted horizontally at C. or perpendicularly at B, (*dispensing with the stopper B.*)
- B. C. shows the line of our "Round Pipe Flues with Socket Joints."
- E. F. G. H. Shows our "Round Pipe Top," (*see page 5, Patterns O. R. or O. R. W.*) and consists of the Double cap piece E.—the Ring F, (*which set in mortar unites E. and G.*)—the Pipe G, (*for extending the top to any desired height*), and the Wind-cap H, (*which can be used or not to resist rains and down draught.*)



To put them up, set the lower pipe on the support A A, (*which can be either a floor or wall, or other arrangement*), fill the socket of the second pipe with hydraulic cement or mortar or fire-clay, and place it over the top of the first, and so continue up, always cleaning out the mortar on the inside of the pipes with a bunch of rags wrapped around a stick. Place stove-pipe holes wherever required. Fit the roof up neatly under the lower end of piece E, so that it will shed the water away from the joint. Place the ring F in the upper socket of E, (*using cement or mortar in the sockets of both E and G*), and place G over that. The Wind Cap H can be placed loosely in position, or fastened with cement, to keep out wind and rain.

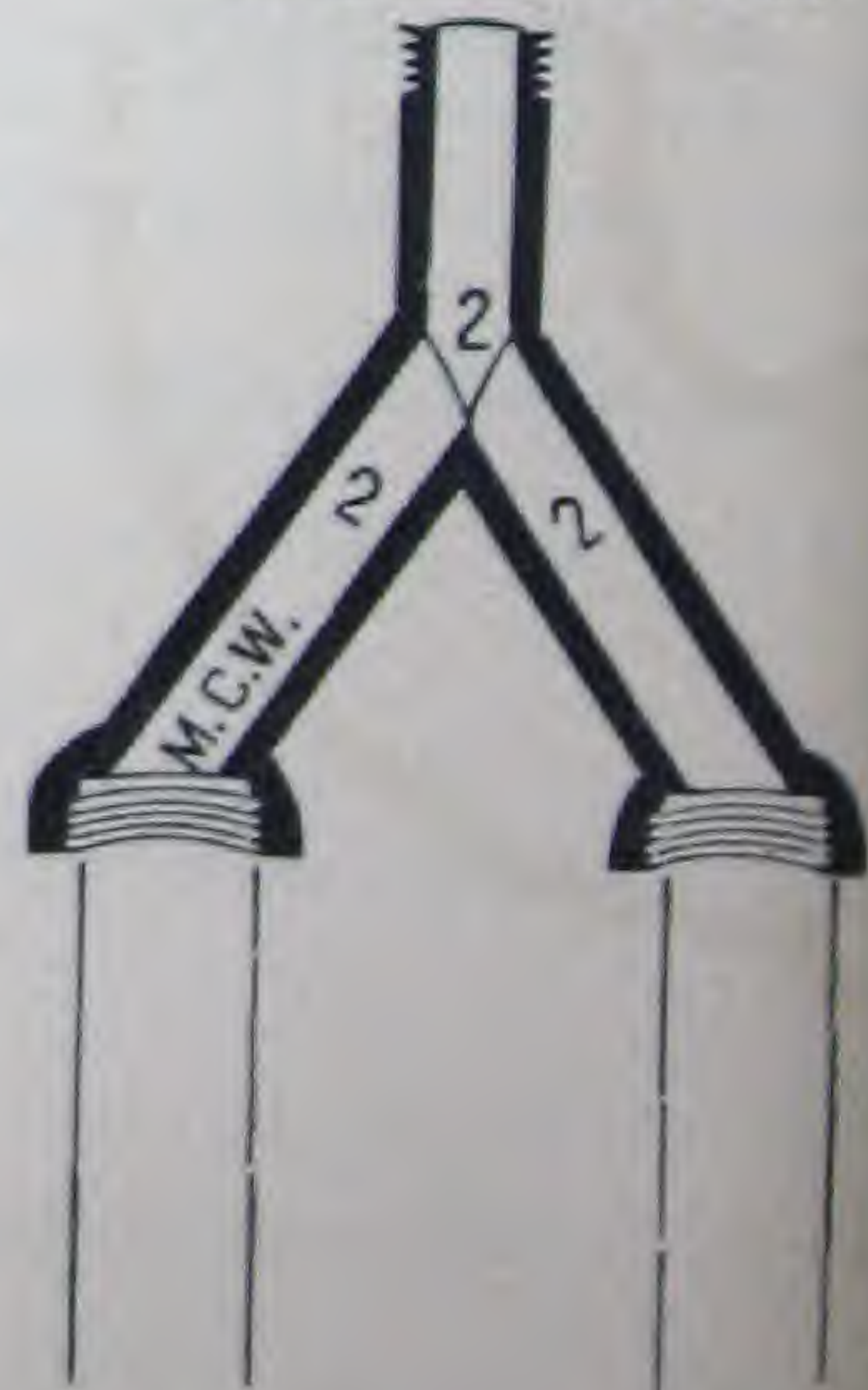
This style of Flue, being only about one-eighth the weight of a brick flue of corresponding power, need not be extended down to foundations in the earth, but can be started from any floor or other point, (*a 6 in. Terra-Cotta Flue weighs about 16 lbs. to the lineal foot.*)

Figure No. 5.

It is often desired to unite together two or more flues running up opposite sides of a building. This can be done by using our V pipe, as in Figure No. 5. For the different sizes of such, see page 27.

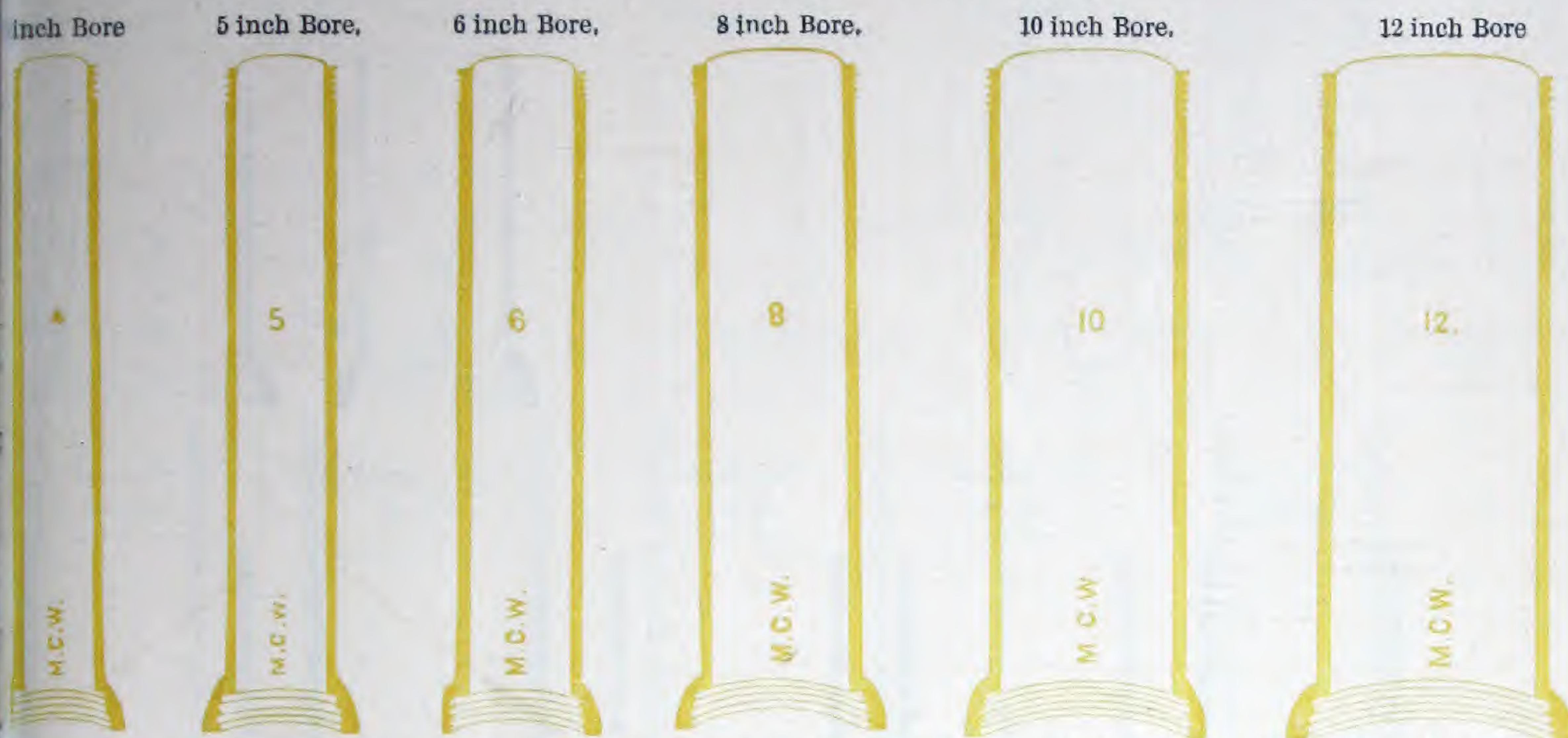
These "Round Pipe Flues" are of great advantage, not only as a substitute for Stone or Brick or Metal Chimneys, but as Conductors of Cold Air to Furnaces, and for Ventilation, Conductors of Hot Air from Furnaces, Rooms, Kilns, Blasts, Underground and other Flues, for every purpose, and for heating Hot or Green Houses (giving a softer and more natural heat than metal.)

For patterns and sizes, see succeeding pages.

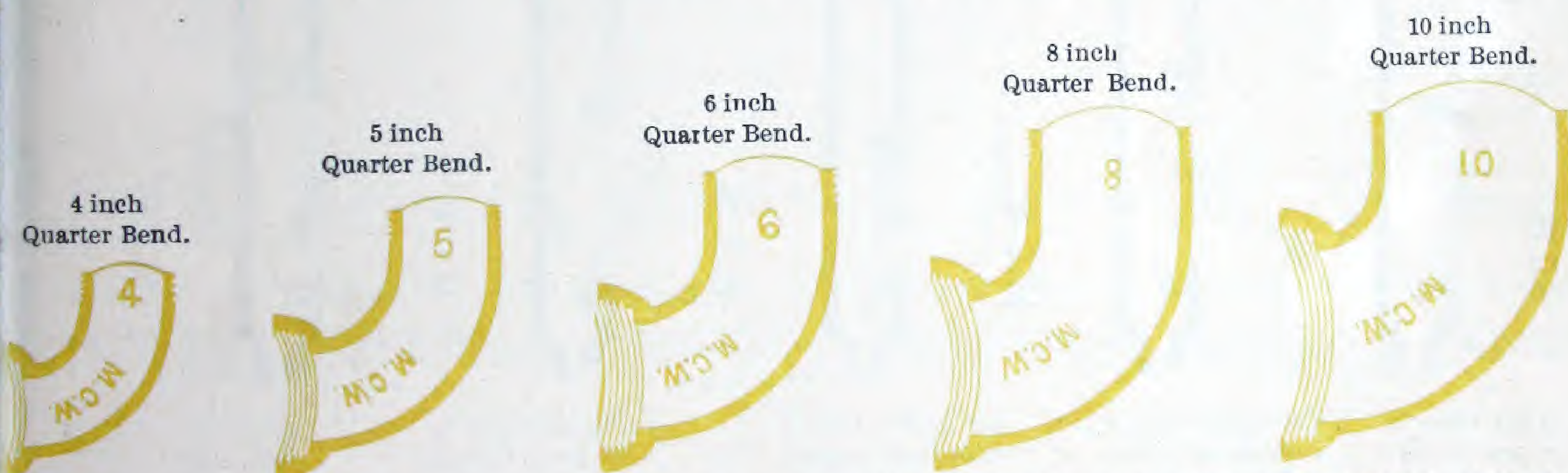


STANDARD PATTERNS AND SIZES OF ROUND PIPE FLUES WITH SOCKET JOINTS, MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

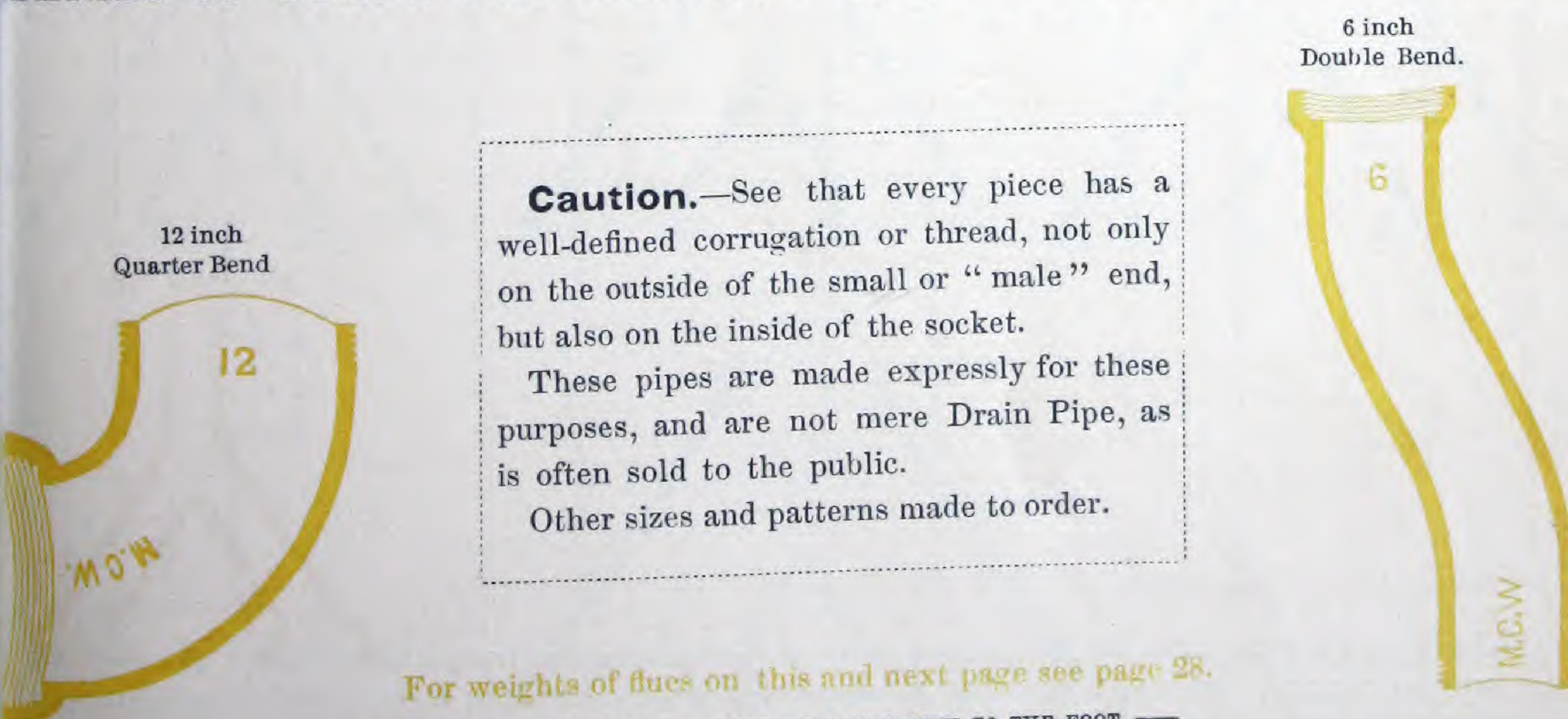
This Series is either Glazed or Unglazed.



SERIES OF "STRAIGHT ROUND PIPE FLUES WITH SOCKET JOINTS."



SERIES OF BENDS FOR CHANGING THE DIRECTION OF THE FLUE.



Caution.—See that every piece has a well-defined corrugation or thread, not only on the outside of the small or "male" end, but also on the inside of the socket.

These pipes are made expressly for these purposes, and are not mere Drain Pipe, as is often sold to the public.

Other sizes and patterns made to order.

For weights of flues on this and next page see page 28.

— SCALE OF MEASURE THREE-QUARTERS INCH TO THE FOOT. —

For advantages of using these, see page 21.

For Directions for setting up, see page 24.

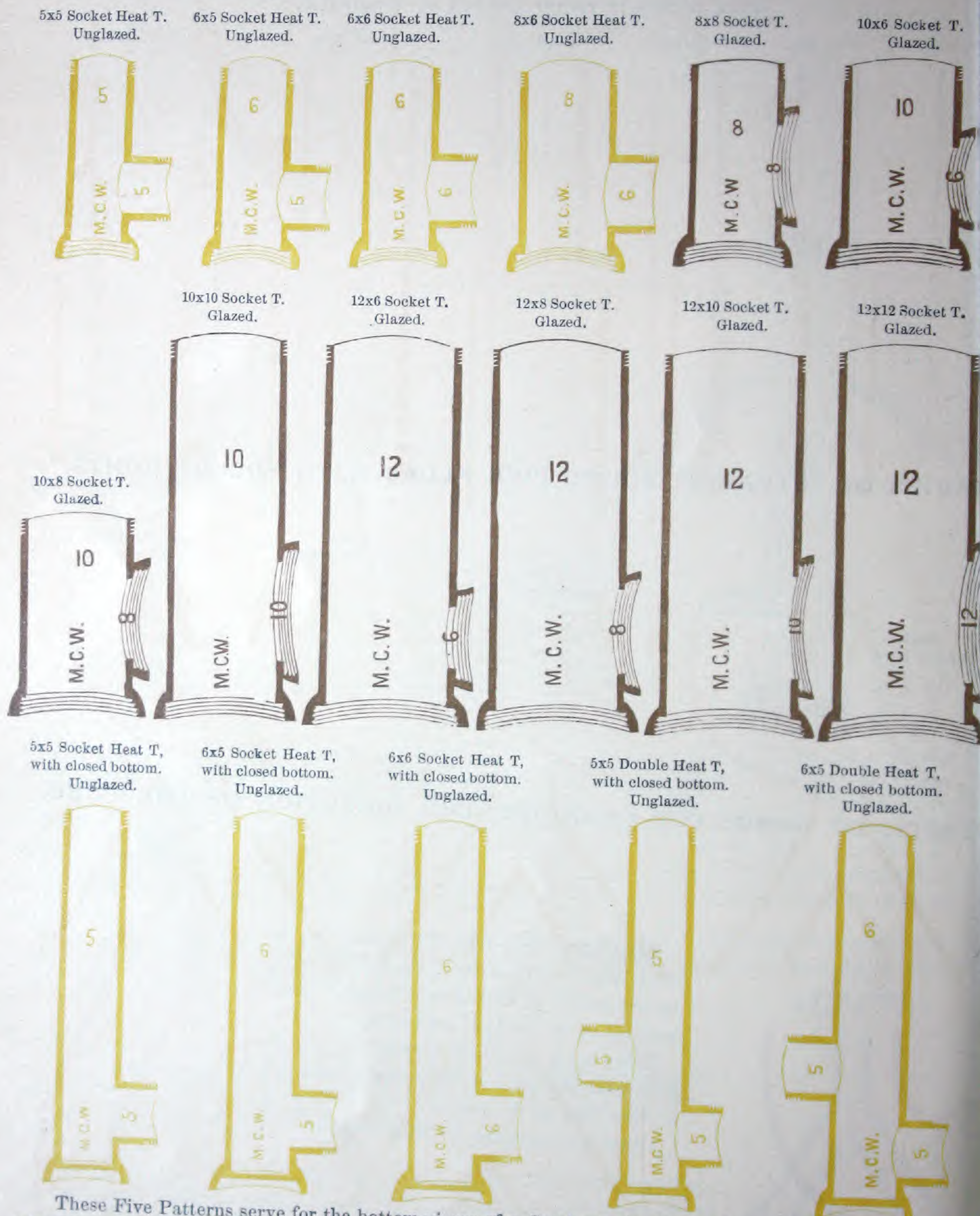
For prices, see Price List No. 243, which will be sent free on application.

(CONTINUED ON PAGE 26.)

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

ROUND PIPE FLUES WITH SOCKET JOINTS,
(Continued from page 25.)

The whole series of seventeen Patterns, on this page, are useful for receiving metallic Stove Pipes or Registers, or other arrangements.



These Five Patterns serve for the bottom-pieces of a Stack starting from a board floor. The bottom-piece prevents danger from sparks. The side-openings serve to receive stove pipes or registers, and by reversing the pipe it acts as the top of a Heat Stack.

—SCALE OF MEASURE, THREE-QUARTERS INCH TO THE FOOT.—

For advantages of using these, see page 21.

For Directions for setting up these, see page 24.

For prices see Price List No. 243, which will be sent free on application.

(CONTINUED ON PAGE 27.)

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.
ROUND PIPE FLUES WITH SOCKET JOINTS.

Continued from page 26.

5x5 Double Heat T,
Unglazed.



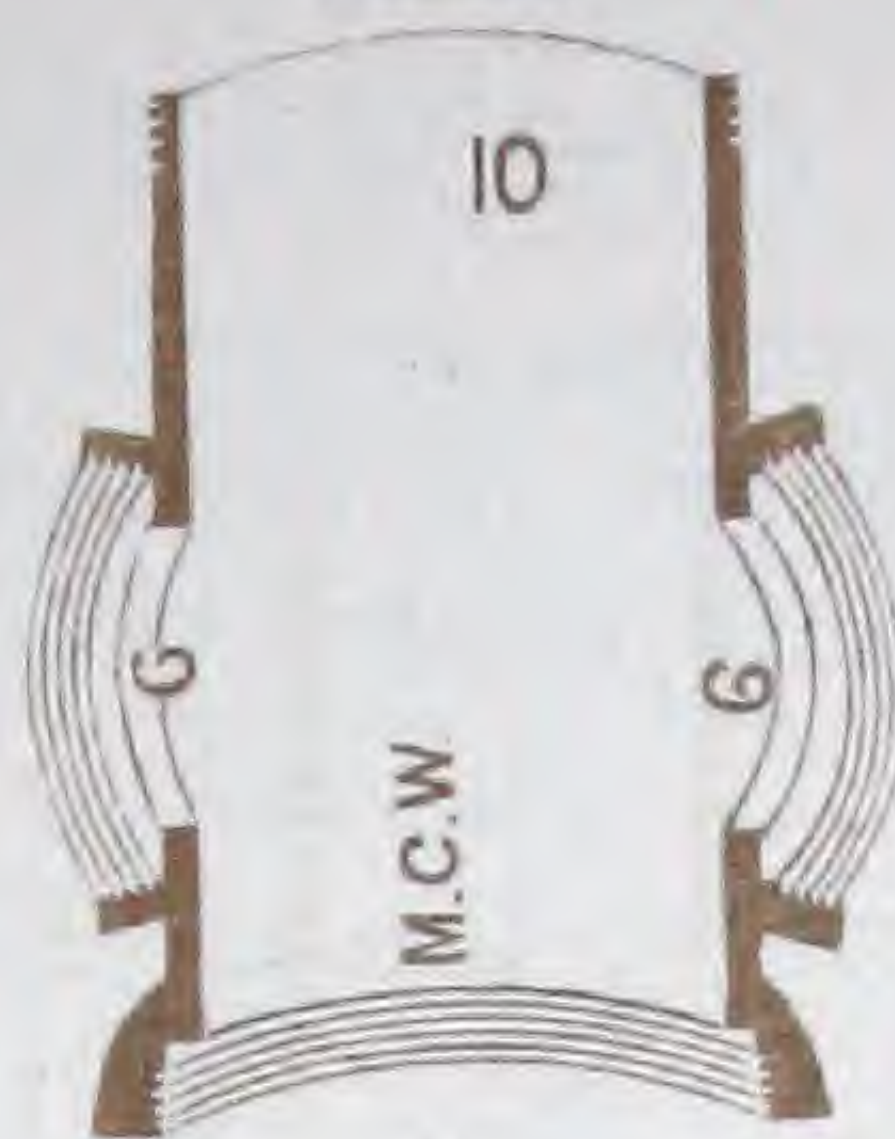
6x6 Double Heat T,
Unglazed.



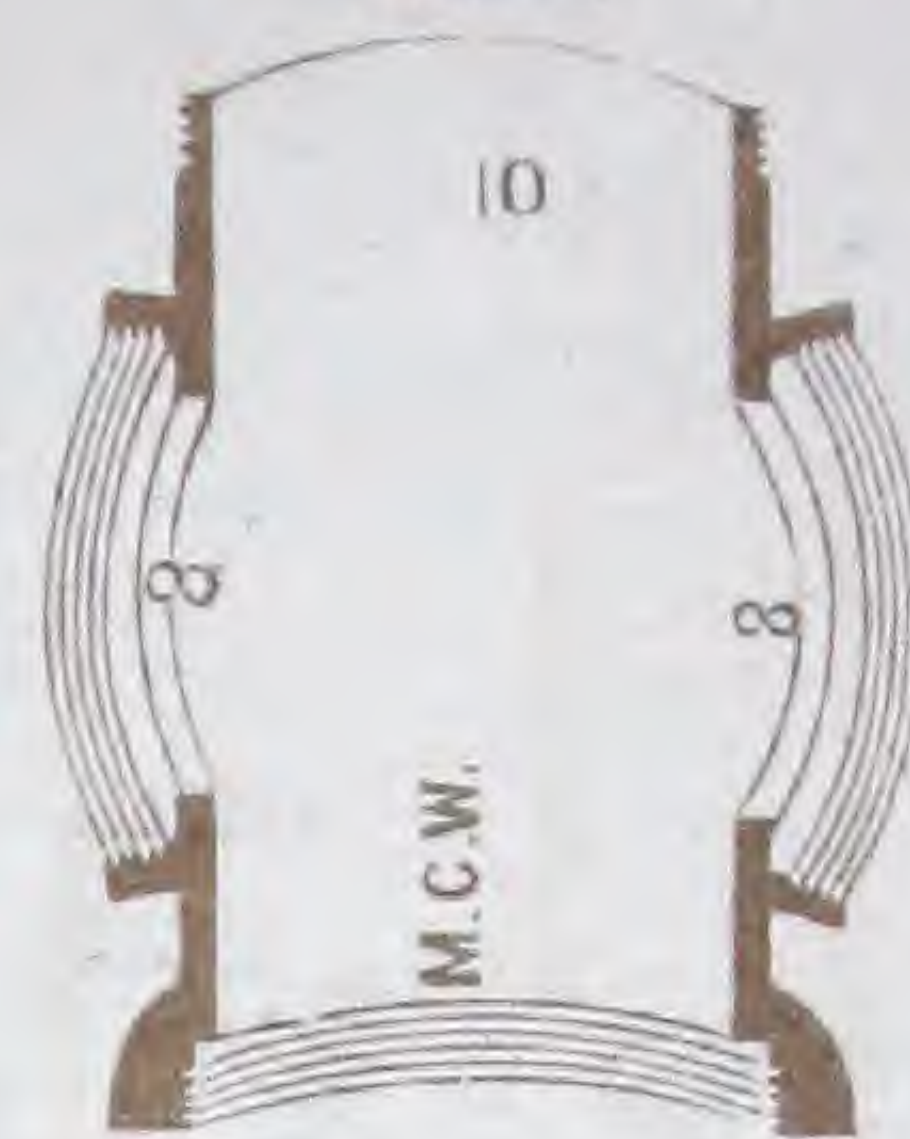
8x6 Double Heat T,
Unglazed.



10x6 Double T,
Glazed.



10x8 Double T,
Glazed.



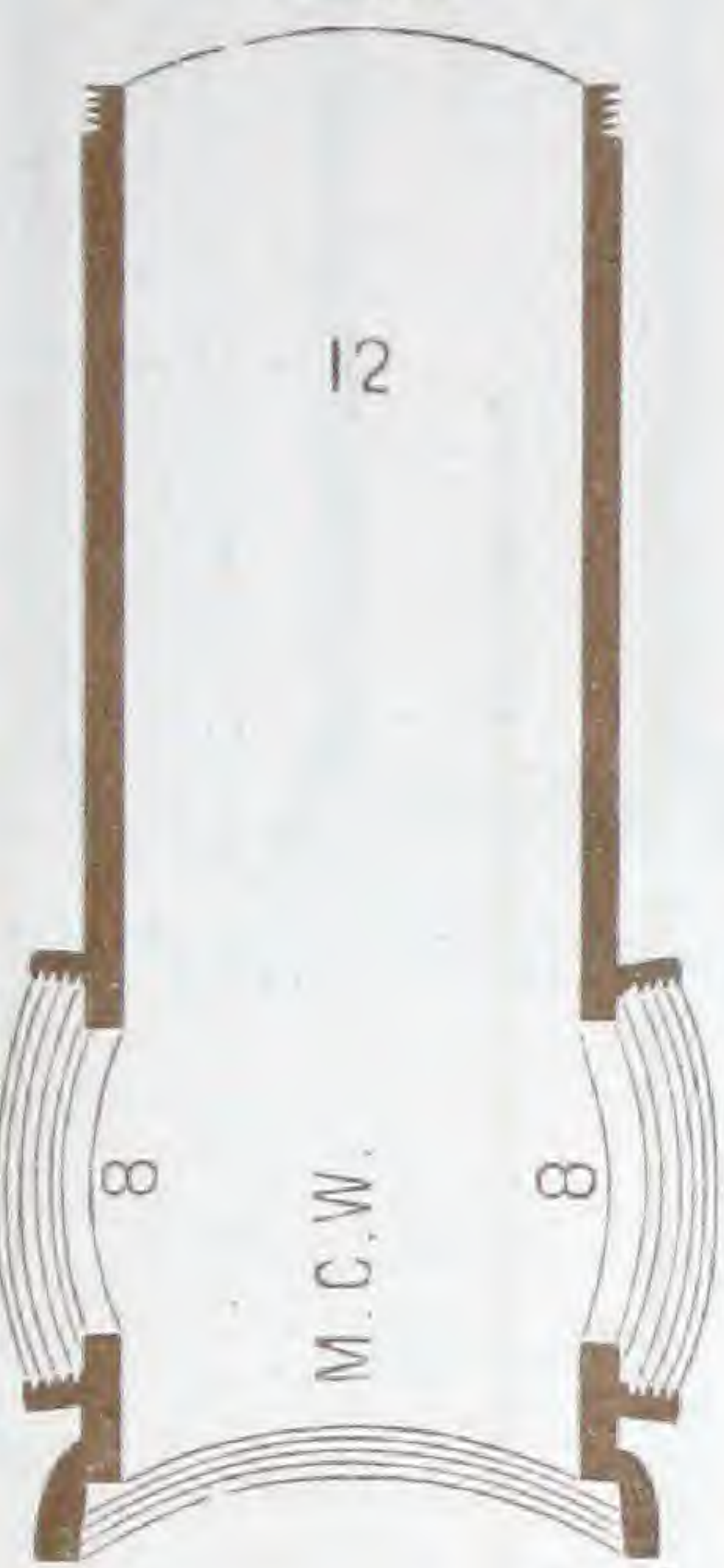
10x10 Double T,
Glazed.



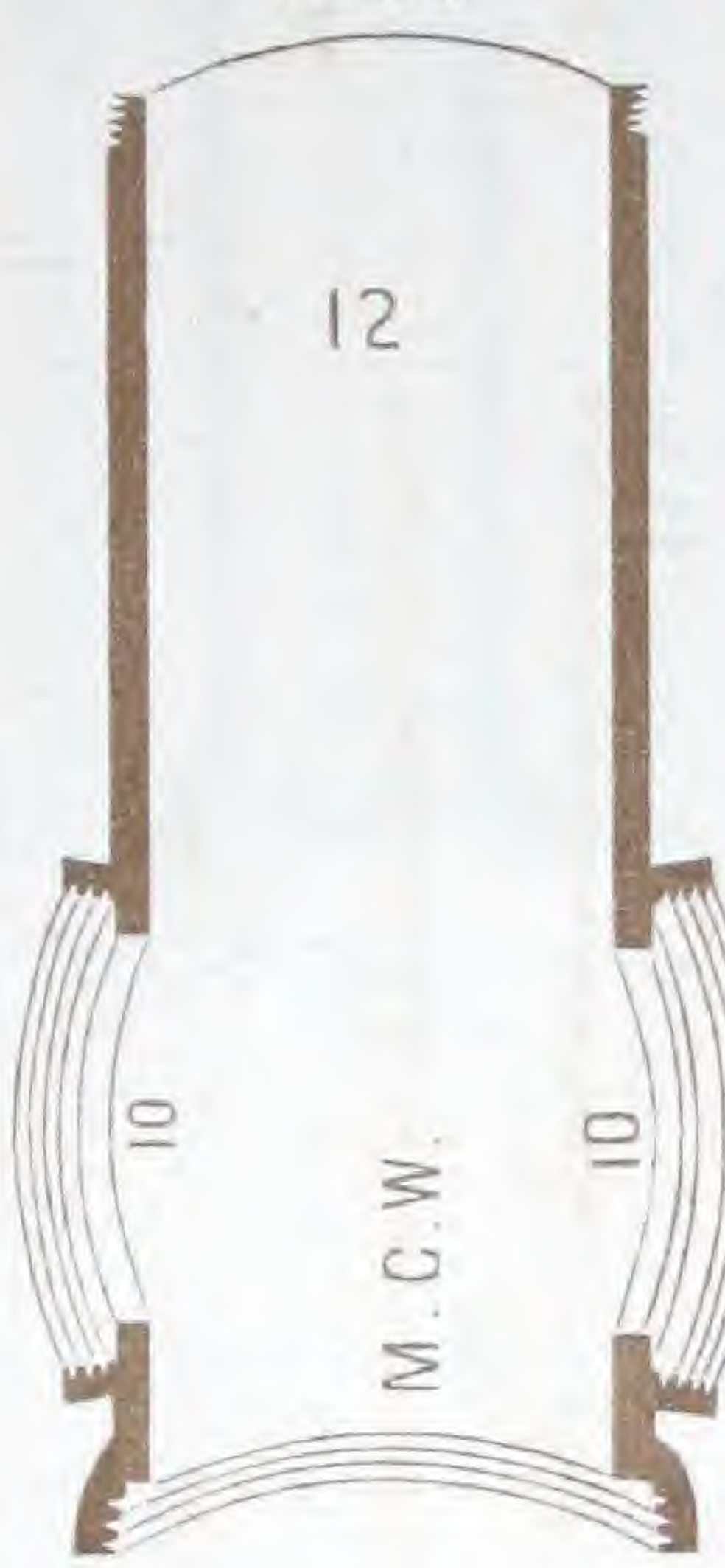
12x6 Double T,
Glazed.



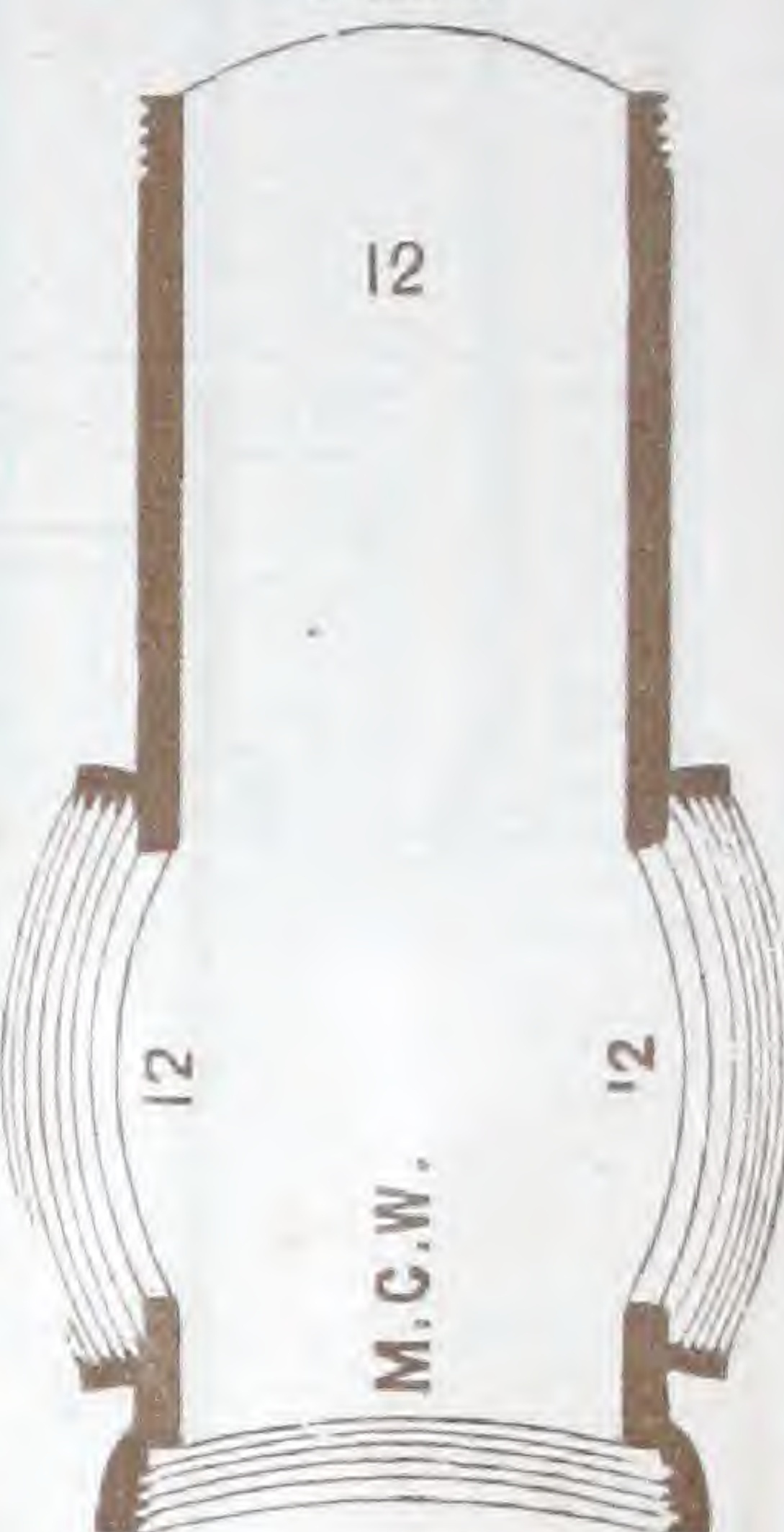
12x8 Double T,
Glazed.



12x10 Double T,
Glazed.

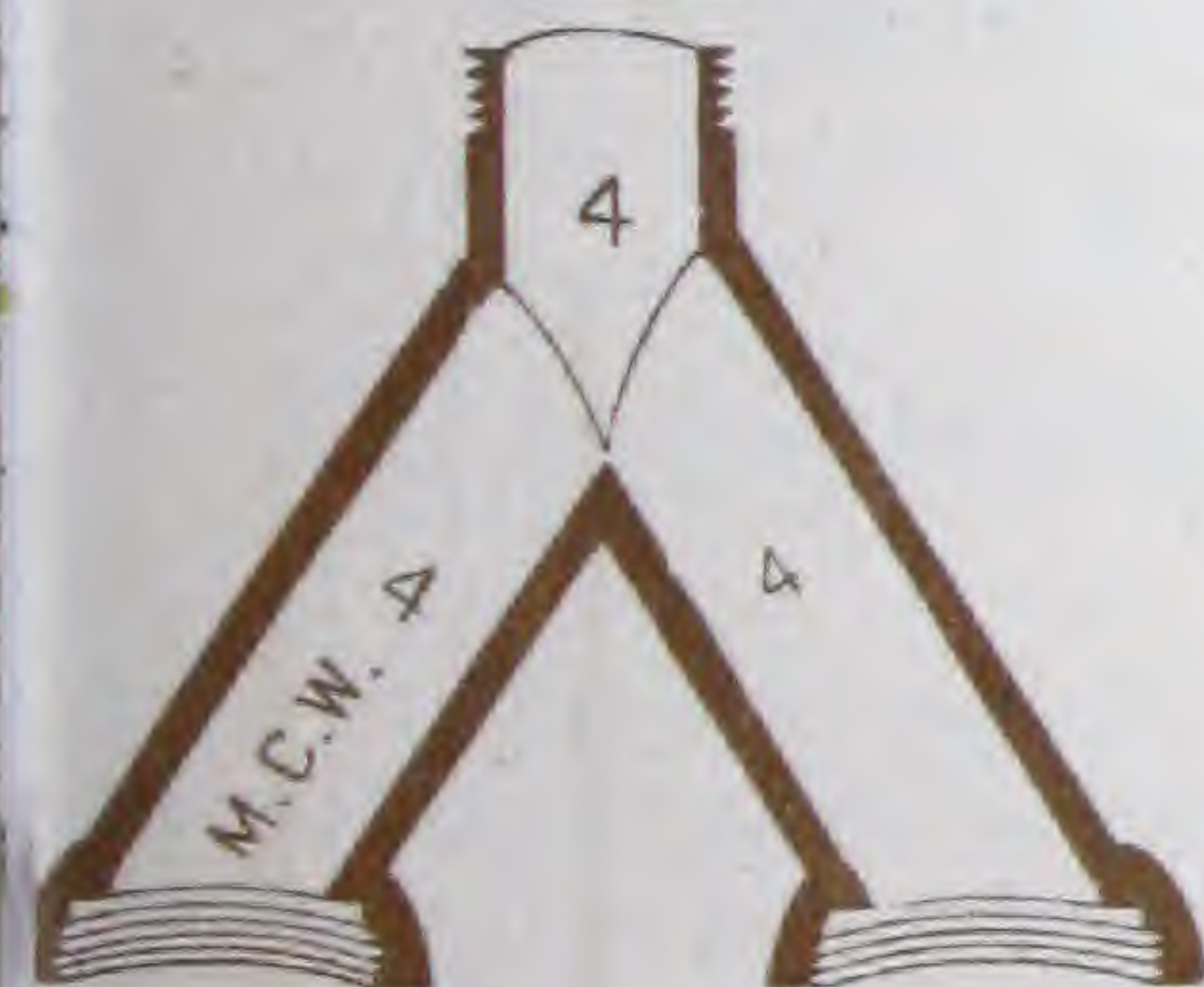


12x12 Double T,
Glazed.

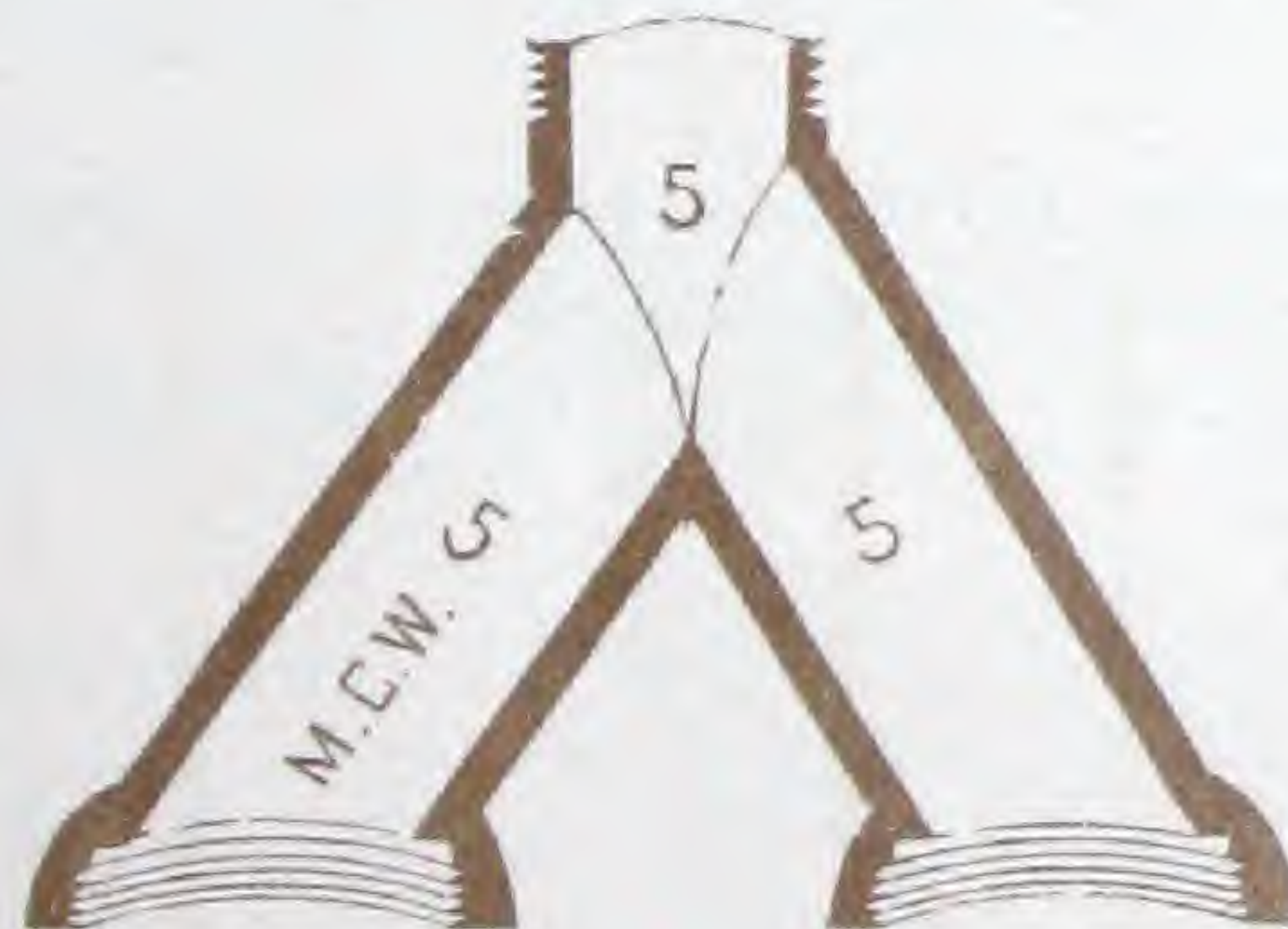


The above ten Patterns are useful for receiving metallic Stove Pipes or Registers, or other arrangements, in opposite rooms.

4 inch Socket V.
Glazed.



5 inch Socket V.
Glazed.



6 inch Socket V.
Glazed.



8 inch Socket V.
Glazed.



The above four Patterns are useful in uniting two flues into one.

—SCALE OF MEASURE, THREE-QUARTERS INCH TO THE FOOT.—

For weights, see page 28.

For advantages of using these, see page 21.

For Directions for setting up, see page 24.

For prices see Price List No. 243, which will be sent free on application.

(CONTINUED ON PAGE 28.)

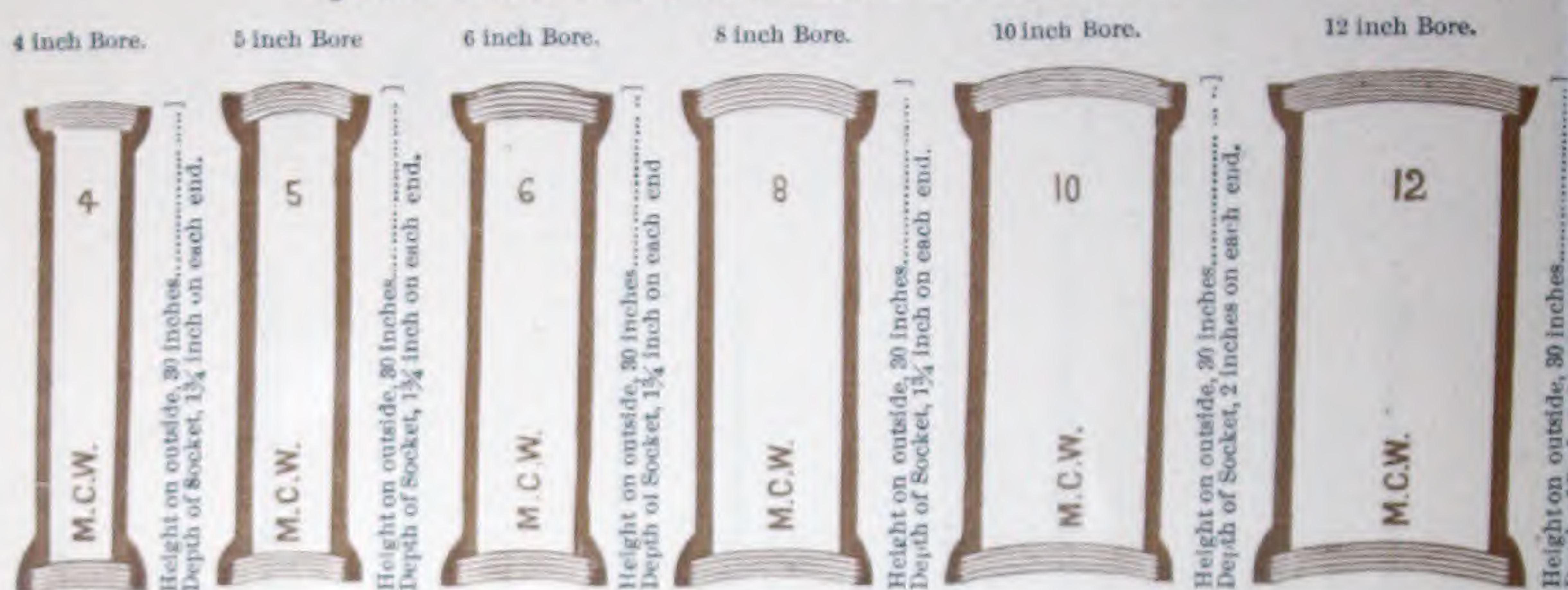
MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

(Continued from page 27.)

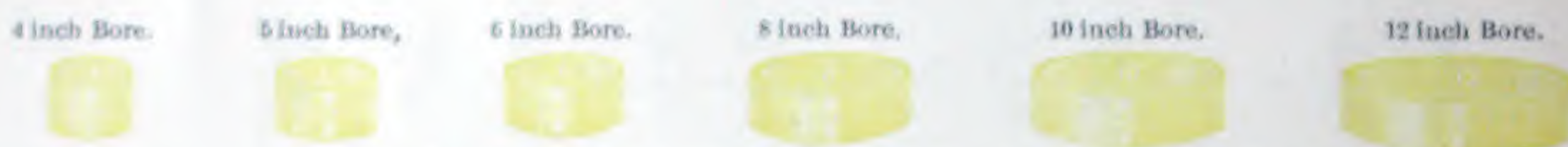
DOUBLE CAPPED PIPES WITH SOCKET JOINTS.

ALL GLAZED.—UNGLAZED MADE TO ORDER,

To be used in connection with O. R. W. 73 Chimney Tops as the bottom joint (see p. 5)
or as couplings in extending lines of Round Pipe Flues with Socket
Joints above roofs, or in other unsupported places.



SERIES OF DOUBLE CAPPED PIPES.



SERIES OF RINGS TO FIT IN DOUBLE CAPPED PIPES.

The whole series of Round Pipe Flues with Socket Joints, weigh per lineal foot about as follows:—
4 inch, 10 lbs.—5 inch, 12 lbs.—6 inch, 18 lbs.—8 inch, 22 lbs.—10 inch, 28 lbs.—12 inch, 37 lbs.

—SCALE OF MEASURE IS THREE-QUARTERS INCH TO THE FOOT.—

For prices, see Price List No. 343, which will be sent free on application.

For advantages of using these see p. 1, 4, and 21.

For Direction for setting up these, see page 4 and 24.

DIRECTIONS FOR SETTING ROUND PIPE FLUES WITH METALLIC BANDED JOINTS,

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

Figure No. 6.

(See also at Figure No. 7.)

Can be used with or without the outside case, *g-g g-g*.



The smoke and heat passing up through F F causes a strong upward draught through the chamber between F F and *g-g g-g* making an excellent ventilating medium.

Referring to Figure No. 6 (F F), shows one of these flues set in position, *g-g g-g* placed outside of it, so as to use the space between for a ventilation chamber.

F F is the Round Pipe Flue in vertical position, running through,

C C the floor, to protect which from danger is inserted and hung on to it,

H H H H the thimble or case (for sizes of which see succeeding pages.)

X is the metallic band to clasp and hold firmly together the end of the lower pipe F and the upper pipe F, which ends meet within the band X. This band can be of tin or galvanized iron, about two inches wide, and long enough to pass completely around the outside of the joint, and either to buckle together as at W, thus:  or turned up at the ends thus:  with

a screw bolt inserted through the ears. Small pieces of metal can also be inserted through this band and into the joint of the pipe, to prevent the band from slipping. *g-g g-g* is the outside Pipe Flue of the same kind, between the butting joints of which is seen the little pieces of bent wire L L, to steady the internal pipe F F. One end of this wire can be inserted inside the band X, and the other through the band N of the same kind, which secures the joints of the outside pipe *g g*.

To set them up, first place a thin layer of mortar or cement on the top of the lower pipe F, and then place the upper pipe F upon it, and plumb both pipes by using small spalls or chips of terra cotta or brick inserted in the joint between the ends of the two pipes—clean out the pipe (as at par. 8, page 24)—place mortar or cement on the inside of the band X, which place in position and tighten up by means of the buckle or screw bolt (as explained in par. 6). Where the Ventilation Chamber between F F and *g g* is not required, F F can be used alone.

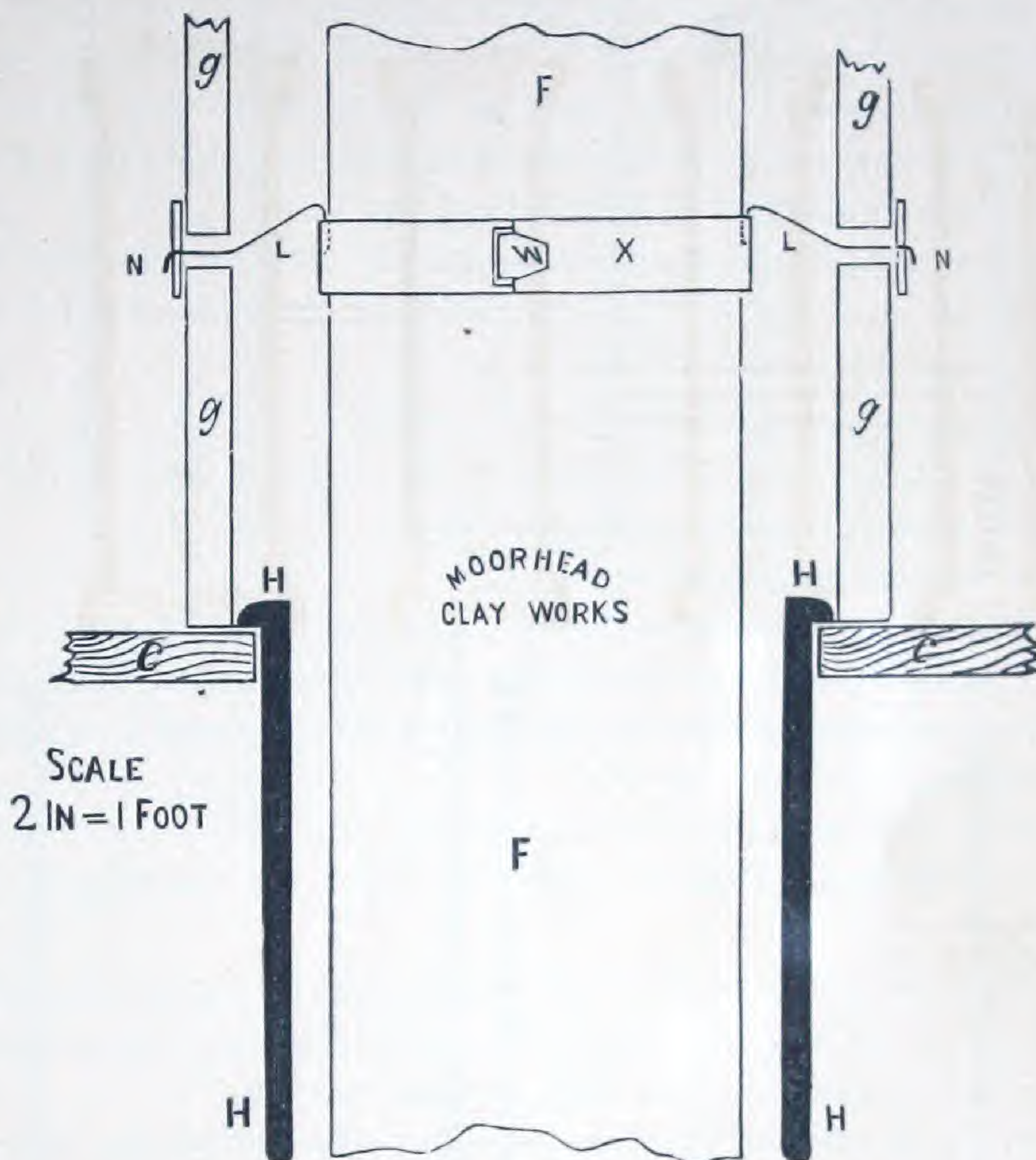
Change of direction, or attachments or entrances, can be made to either flue by using our bends (see p. 32) or T branches (see p. 33), or two or more flues can be united in one, (as mentioned on p. 25 figure No. 5).

Two or more flues can readily be clustered in one space, thus:



These flues can also be used to run in other directions than vertically.

(CONTINUED ON PAGE 30.)



This arrangement can be seen more extended in Figure No. 7 on page 30.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

Continued from page 29.

Figure No. 7 shows our "Round Pipe Flues, with Banded Joints," inside of terra-cotta pipe or case. (The "Round Ribbed Flue with Metallic Joints" can also be used in this way.)

F. O. P. F. shows the inside Round Pipe Flues, starting from and supported on a. a. (which can be either a floor, or braces, or wall, or other arrangement, and beginning near the ceiling of the first story, (there receiving a metallic stove pipe "e" on the right), thence running upwards through the floor c b, and receiving another stove pipe on the left, and continuing on up through the next floor, c c, b b b b, and the roof L L, and surmounted by the wind cap, M.

g. g. g. shows the outer terra-cotta Pipe or Case, starting on the floor c c, receiving registers or ventilation draughts at J and J, and projecting up through the roof, L L.

a. supports of wood, metal, stone, or brick.

b. floor joist running from right to left on lower floor, and running away from the reader on the upper floor.

c. the floor boards laid on joist b.

d. a metallic stopper to clear out dust and soot, (removable at will.)

e. metallic stove pipe connecting the furnace or stove with our flues, (such stove pipes can either connect laterally as in the drawing, or be inserted where the stopper "d" now is)

F. is our Round Pipe Flues, in sections of 3 feet.

g. is our Round Pipes in sections of 3 feet, for enclosing the inner pipe F.

H. the thimble, (see on a larger scale at figure no. 6 on page 29, and for sizes see succeeding pages.) inserted for safety from fire, between pipe F and joist b, and floor c on which it hangs by its lip.

I. the T piece of pipe, (see succeeding pages.) to receive the metal stove pipes.

J. the T piece of pipe, (see succeeding pages.) to receive registers or other apparatus for ventilating.

K. a shield or apron of felt or metal attached to the pipe "g" and the roof L, to resist rain and snow.

L. the roof line.

M. Wind Cap placed loosely, (or set in cement,) on pipe F, to guard against rain or snow or down draughts,

→ showing direction of the currents of smoke, gas and ventilation.

N. Joints between the sections of pipes F and g.

O. metallic band around the joint of pipe F.

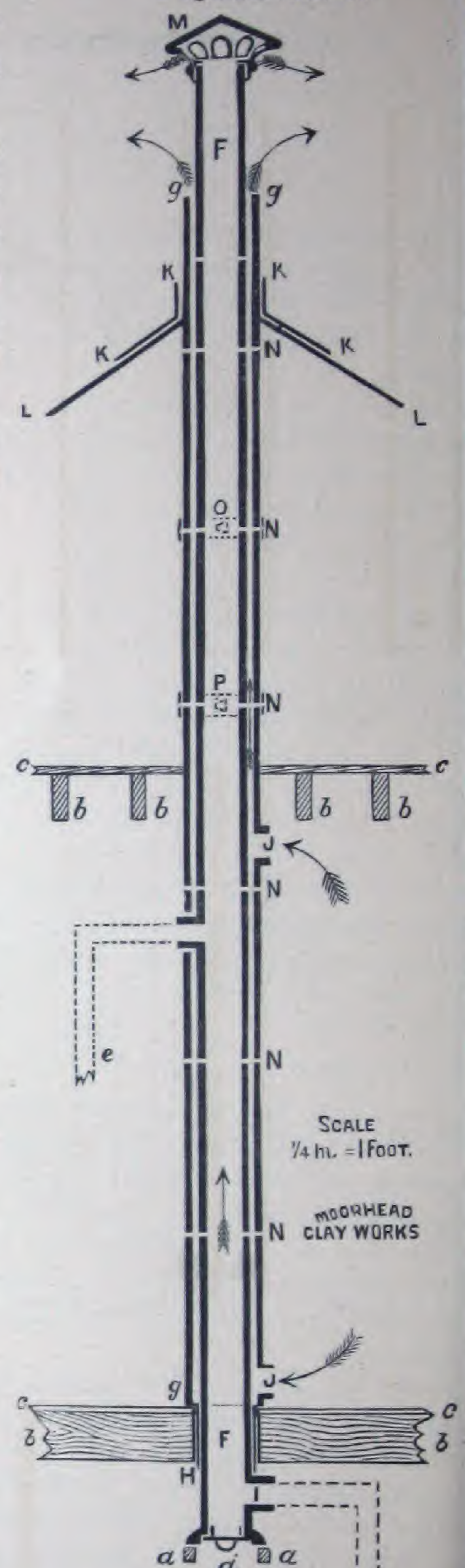
P. metallic band around the joint of pipe g.

The space between F F and g g g being warmed by the heat and smoke passing through F creates a strong upward current in the chambers between the two pipes, and is a valuable ventilating medium.

If from the locality the rain or wind drives down between g and F, it can be corrected by a larger wind cap placed on F and closer down to g.

We have this exact pattern in use at our office and warehouse, where it acts perfectly and can be readily inspected.

Figure No. 7.



A Section of the above plan drawn to a larger scale can be seen on page 29.

—SCALE OF MEASURE IS THREE QUARTERS INCH TO THE FOOT—

For advantages of using these flues, see page 21.

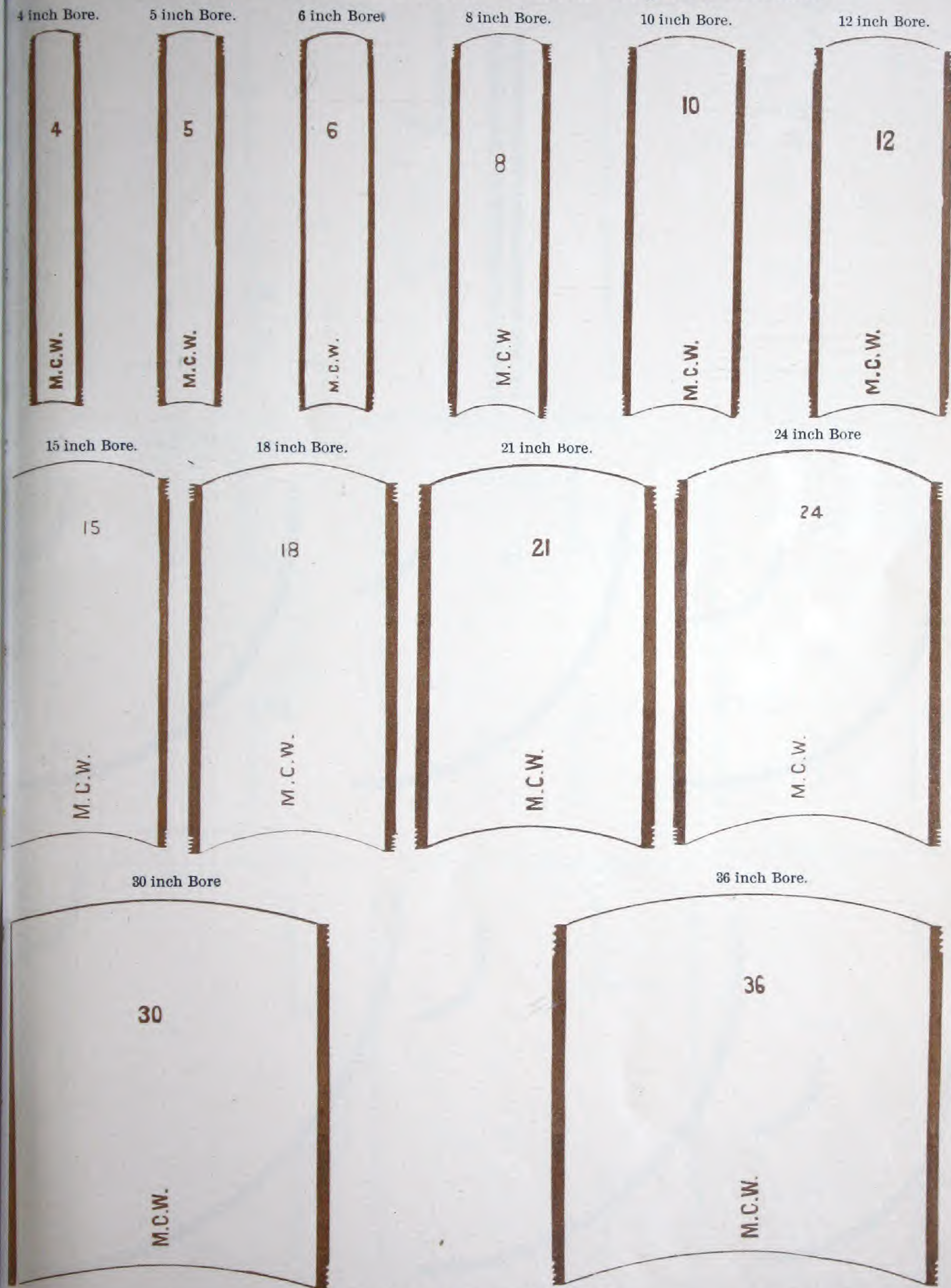
For Patterns and Sizes, see pages 31 to 35.

For directions for setting up these, see page 29.

STANDARD PATTERNS AND SIZES OF ROUND PIPE FLUES WITH METALLIC BANDED JOINTS.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

This Series is all Glazed, but are made Unglazed to order.



Series of Straight Pipes.

For weights, see page 35.

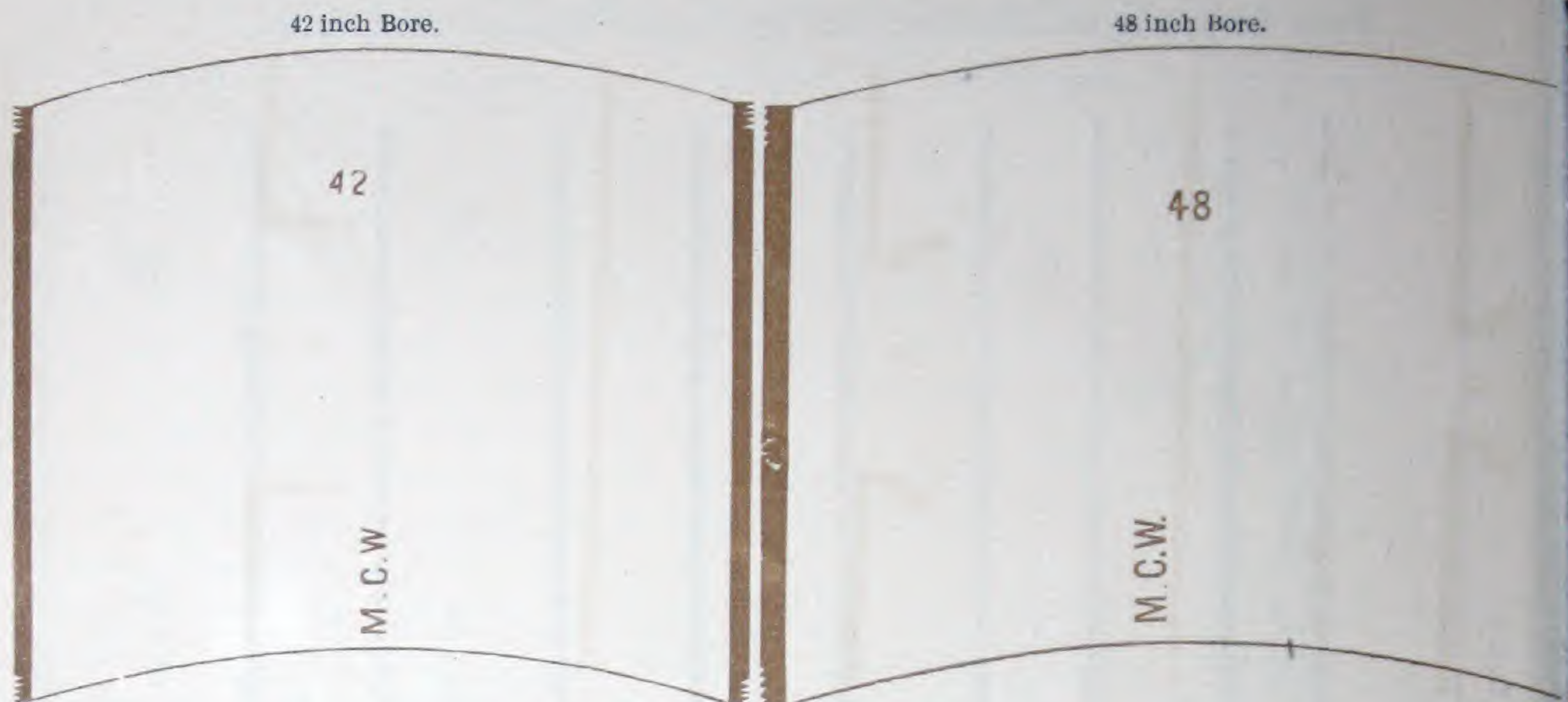
— SCALE OF MEASURE THREE-QUARTERS INCH TO THE FOOT. —

(CONTINUED ON PAGE 32.)

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

Continued from page 31.

ALL GLAZED.—UNGLAZED MADE TO ORDER.



Series of Straight Pipe.



Series of Quarter Bends.

— SCALE OF MEASURE THREE QUARTERS INCH TO THE FOOT. —
 (CONTINUED ON PAGE 33.)

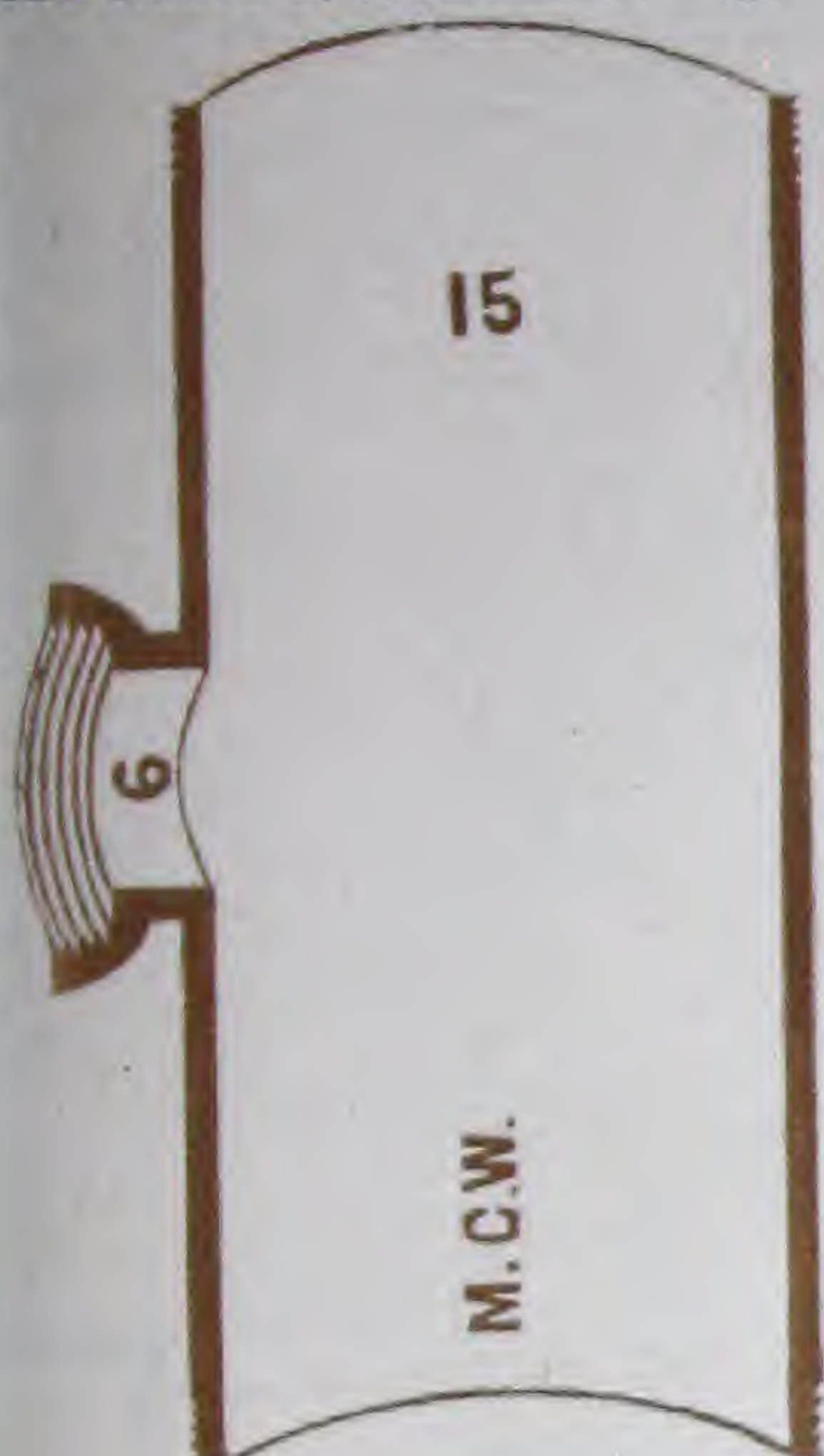
For weights see page 35.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

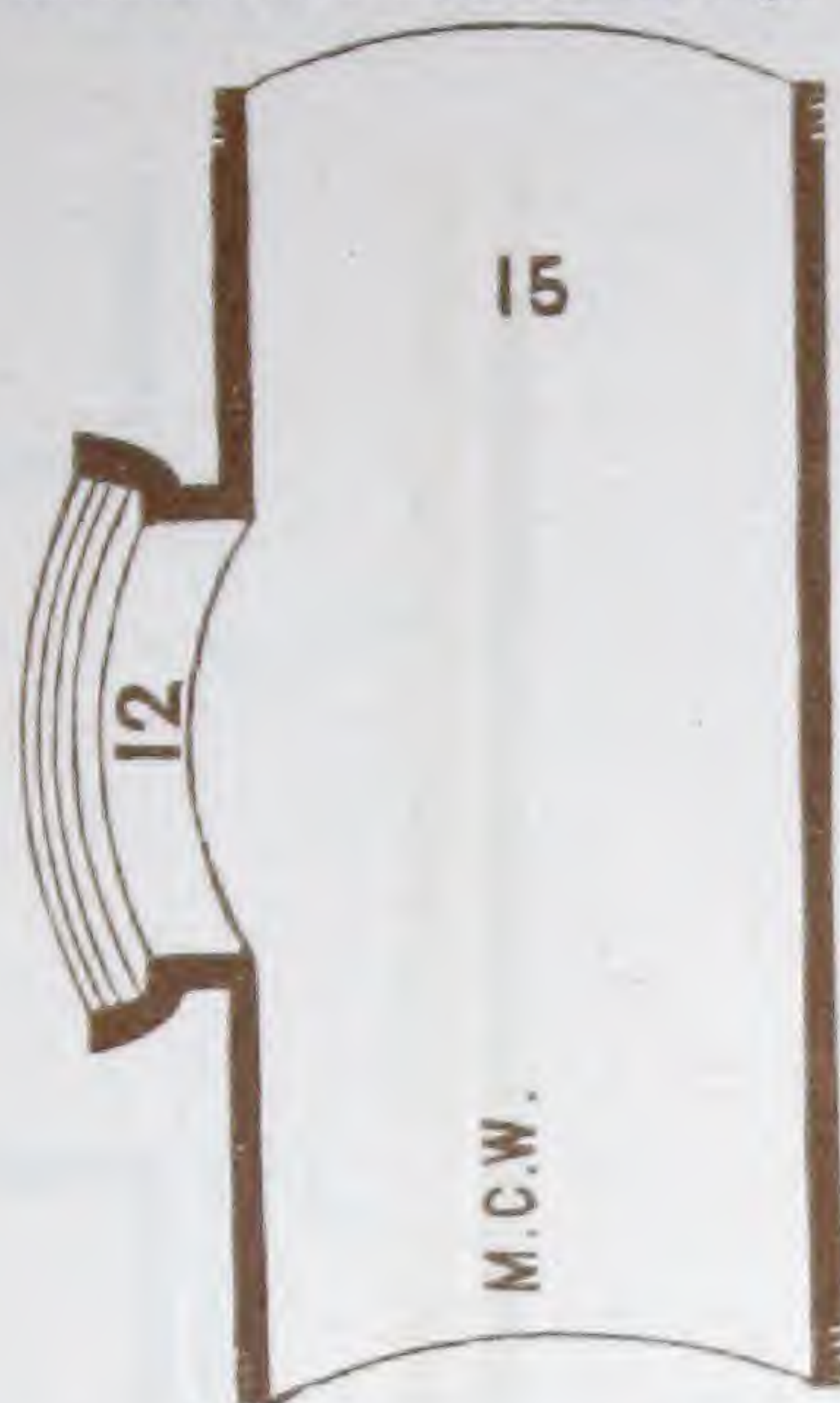
Continued from page 32.

ALL GLAZED—UNGLAZED MADE TO ORDER.

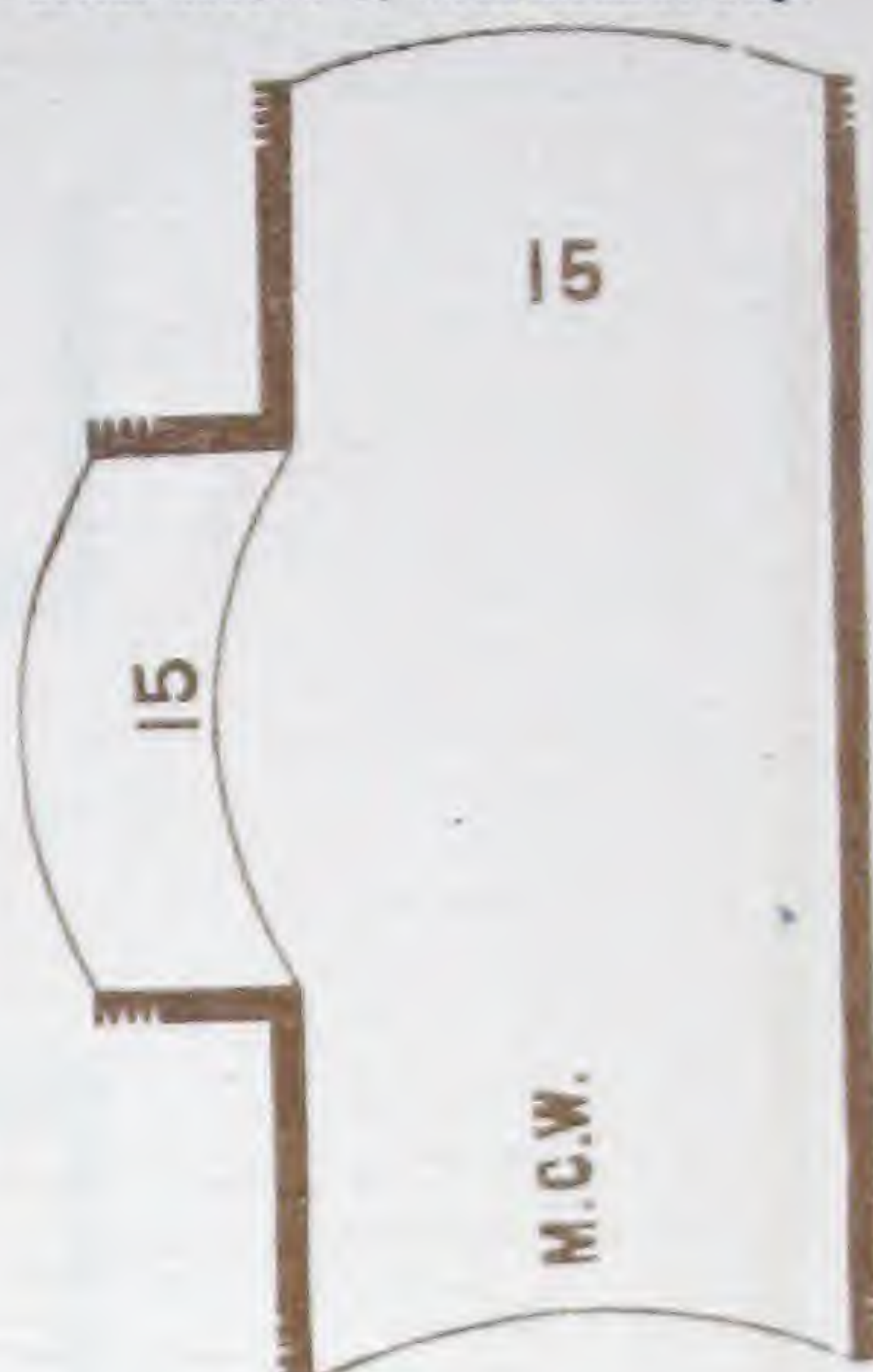
15x6 Sleeve T, with Socket Tap.



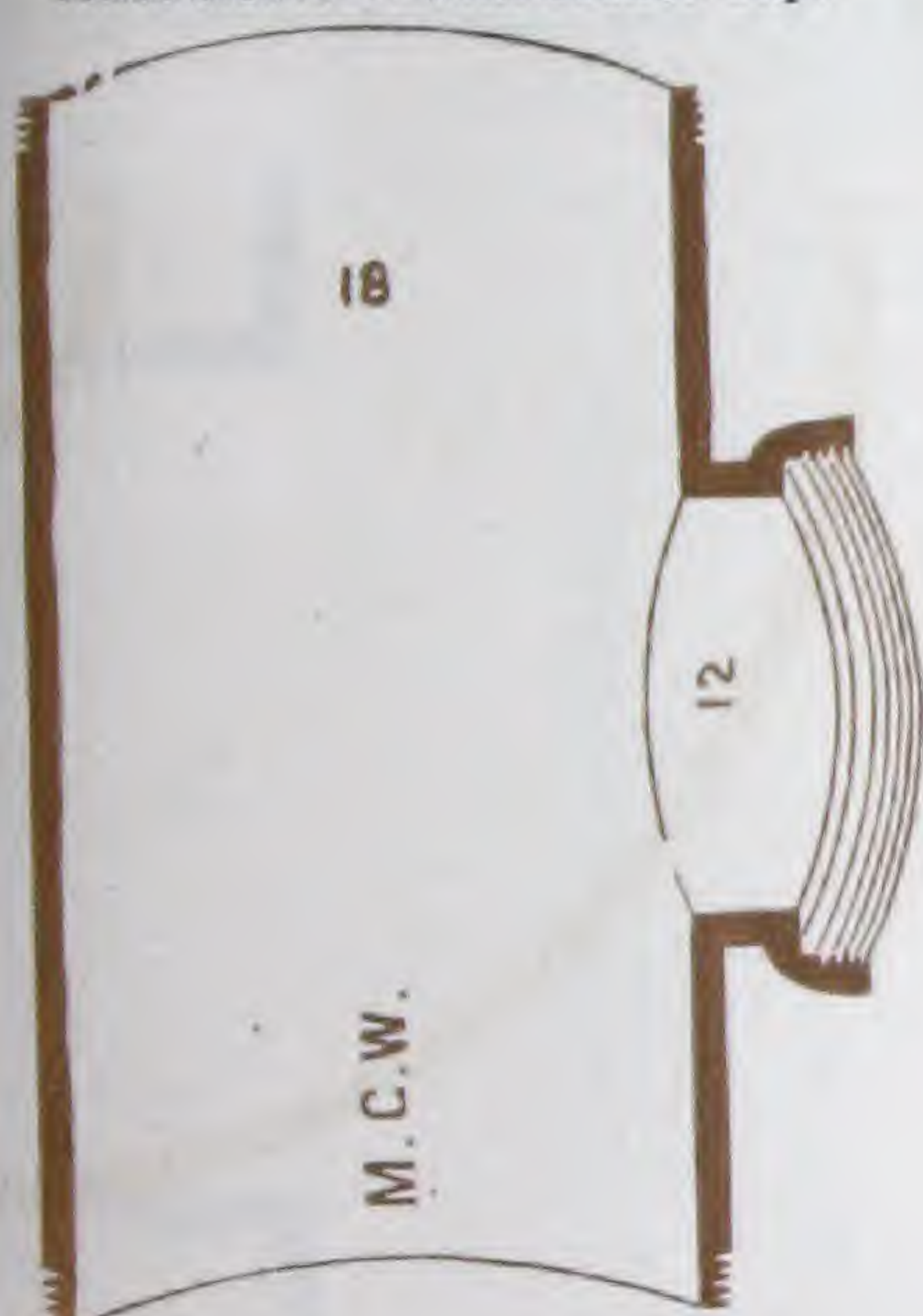
15x12 Sleeve T with Socket Tap.



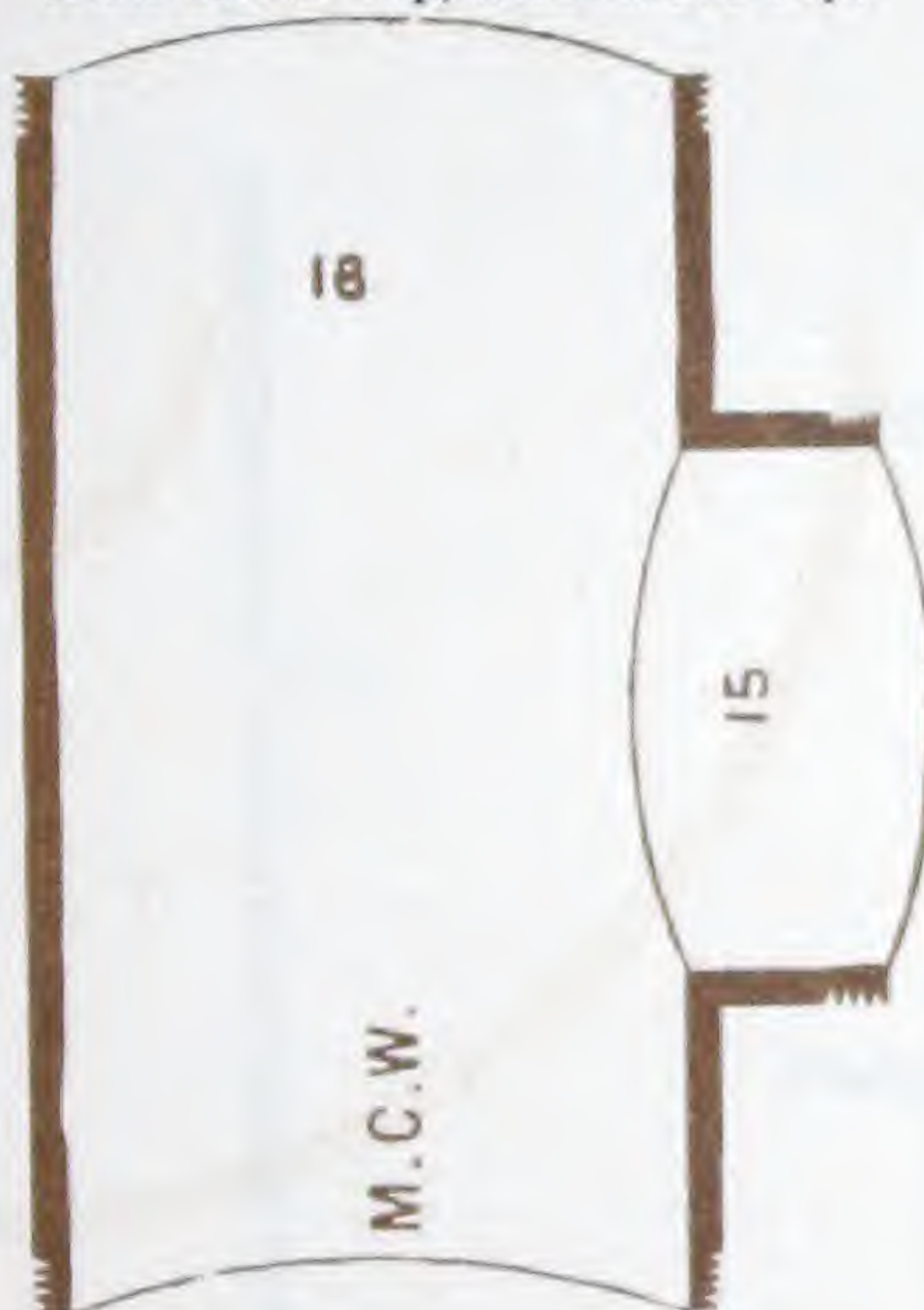
15x15 Sleeve T, with Socket Tap.



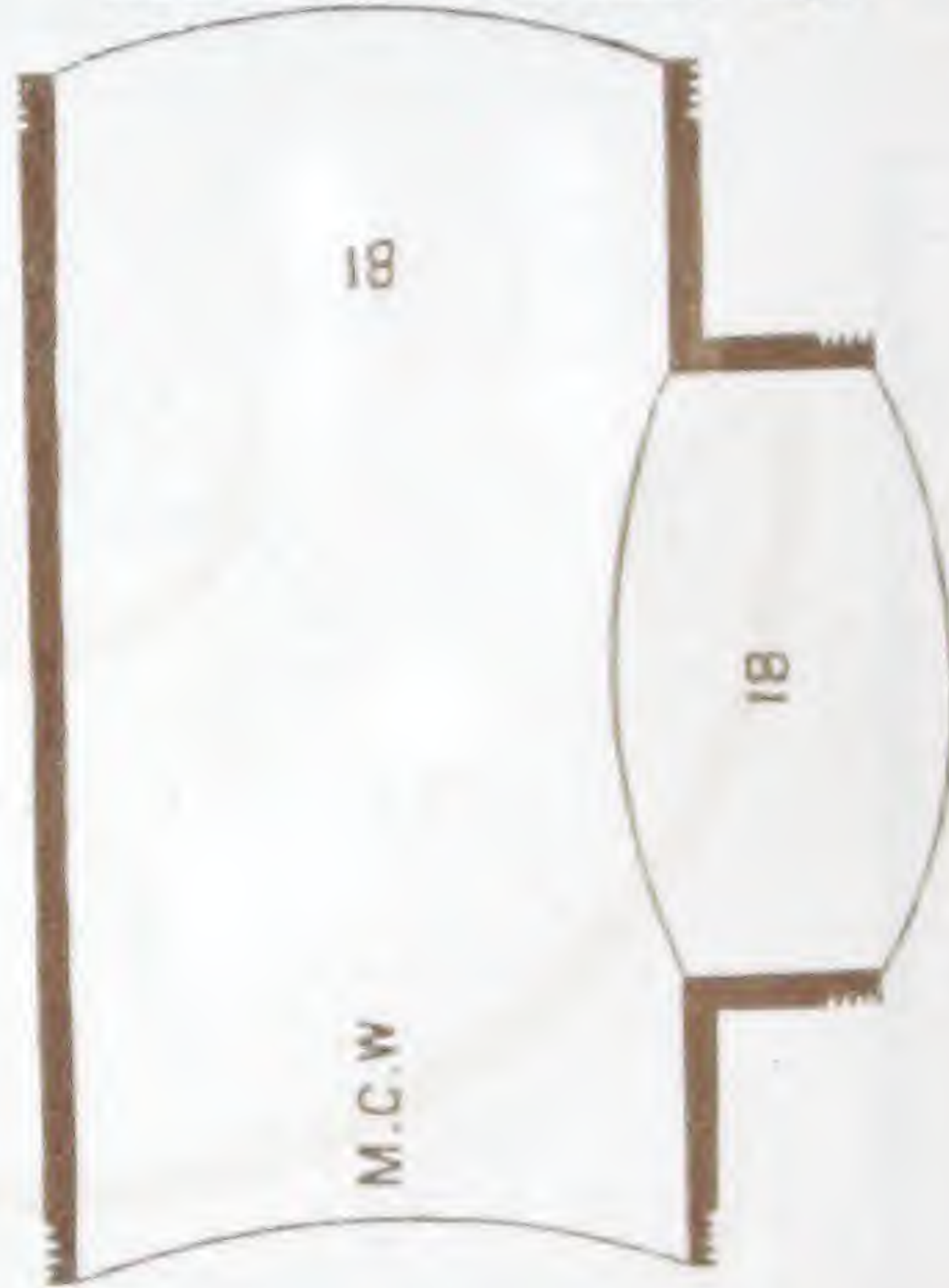
18x12 Sleeve T. with Socket Tap.



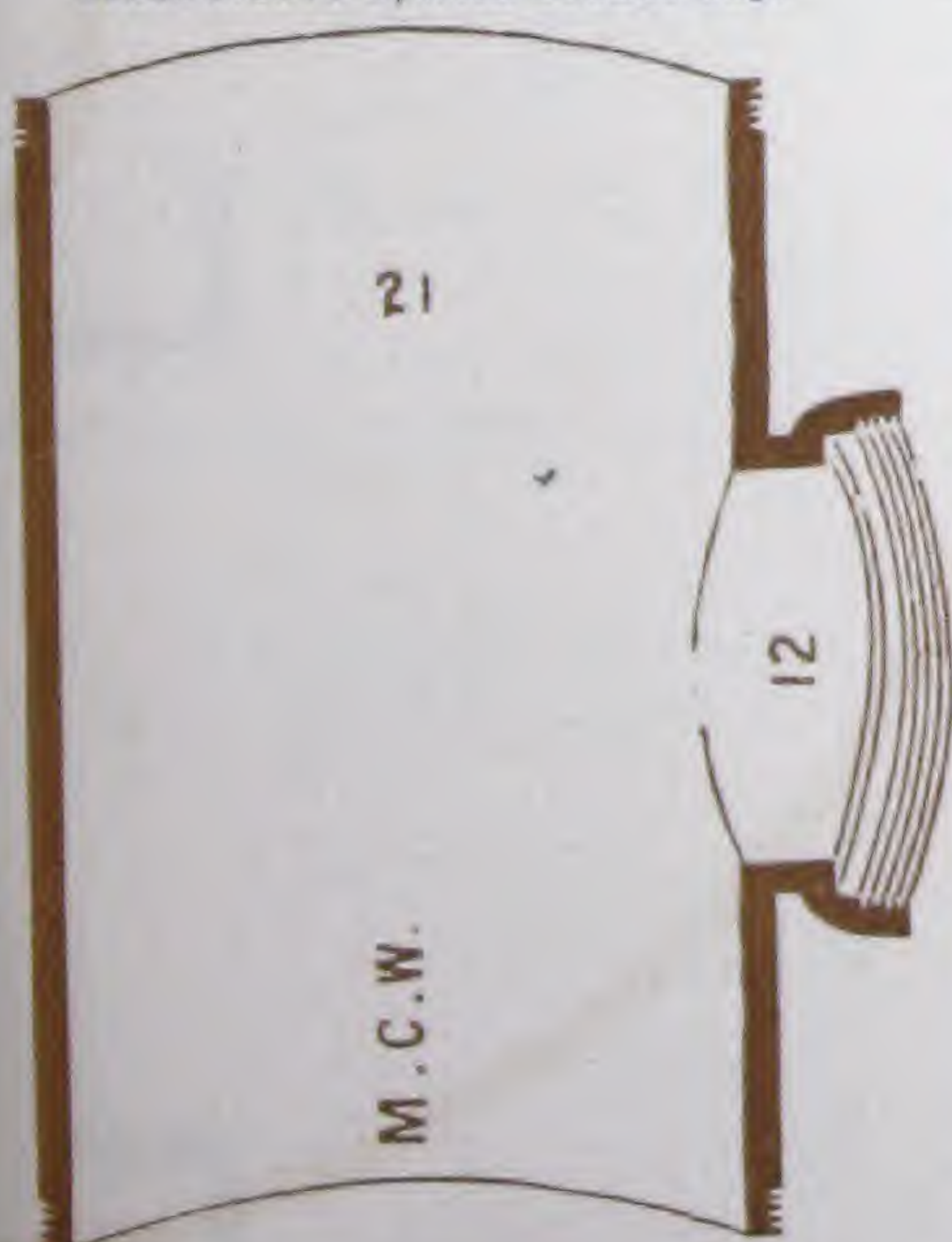
18x15 Sleeve Tap, with Sleeve Tap.



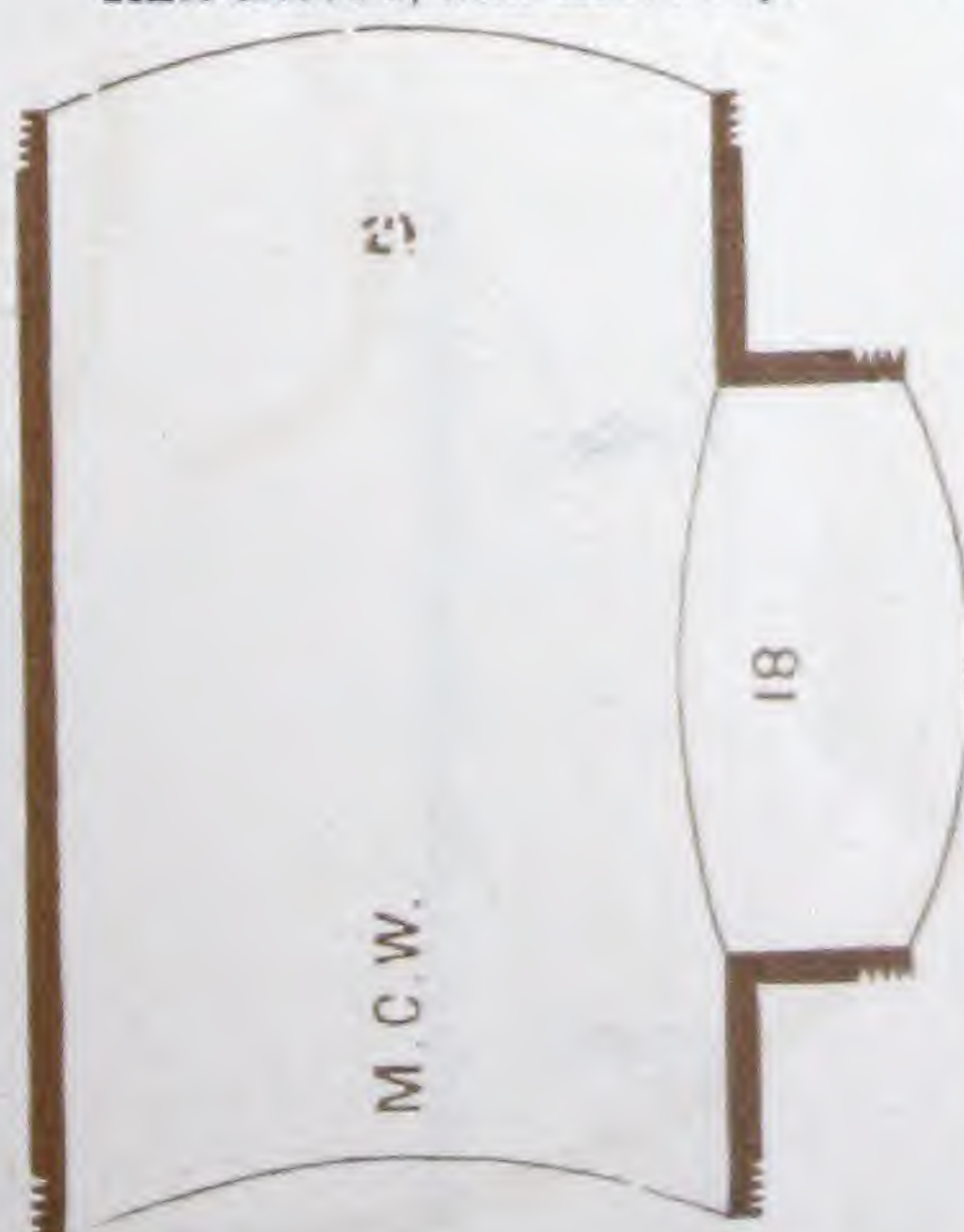
18x18 Sleeve T, with Sleeve Tap.



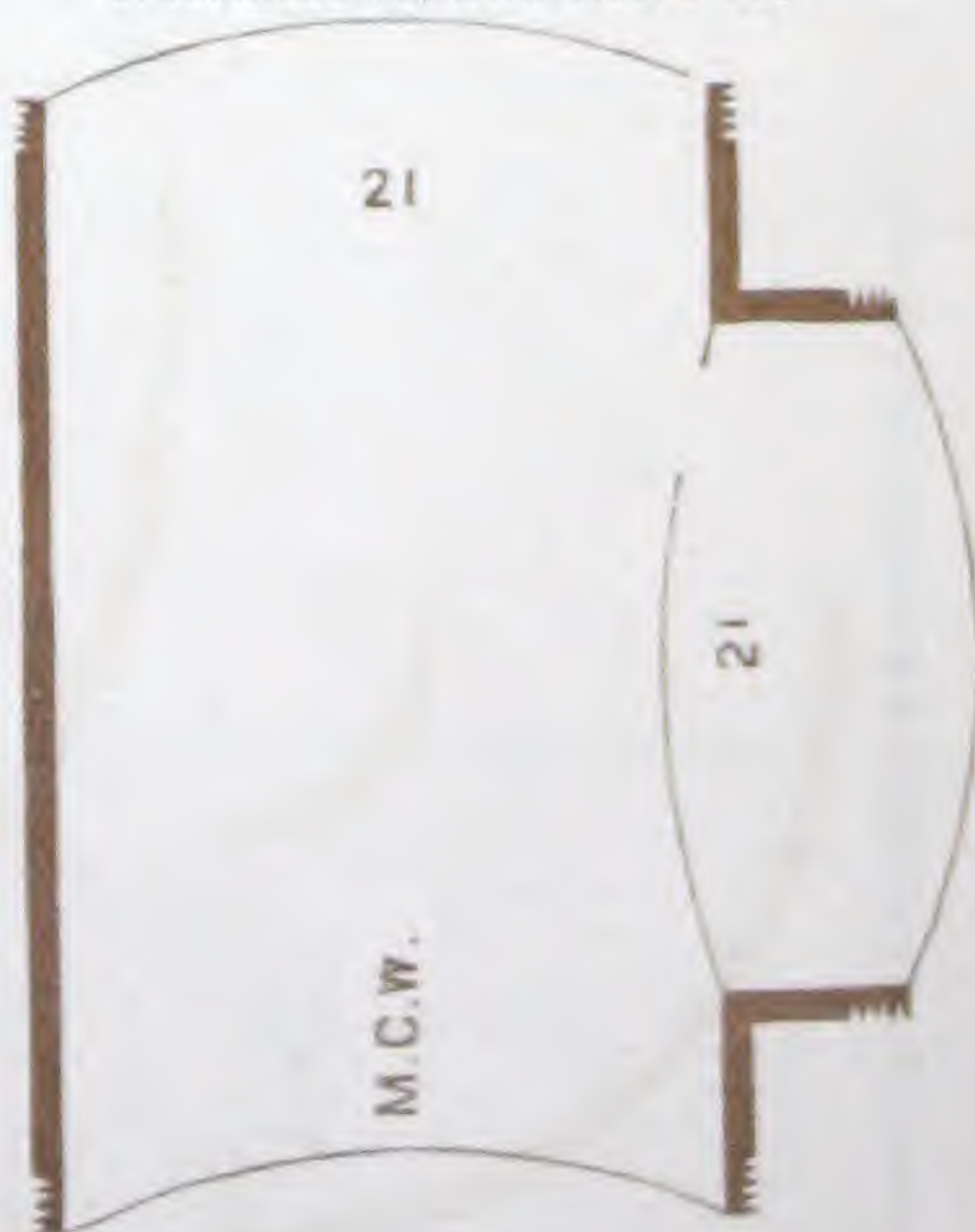
21x12 Sleeve T, with Socket Tap.



21x18 Sleeve T, with Sleeve Tap.



21x21 Sleeve T, with Sleeve Tap.



Series of T Branches for Taps for introducing lateral flues into Vertical or Horizontal Round Pipe Flues with Metallic Banded Joints.

—SCALE OF MEASURE, THREE-QUARTERS INCH TO THE FOOT.—

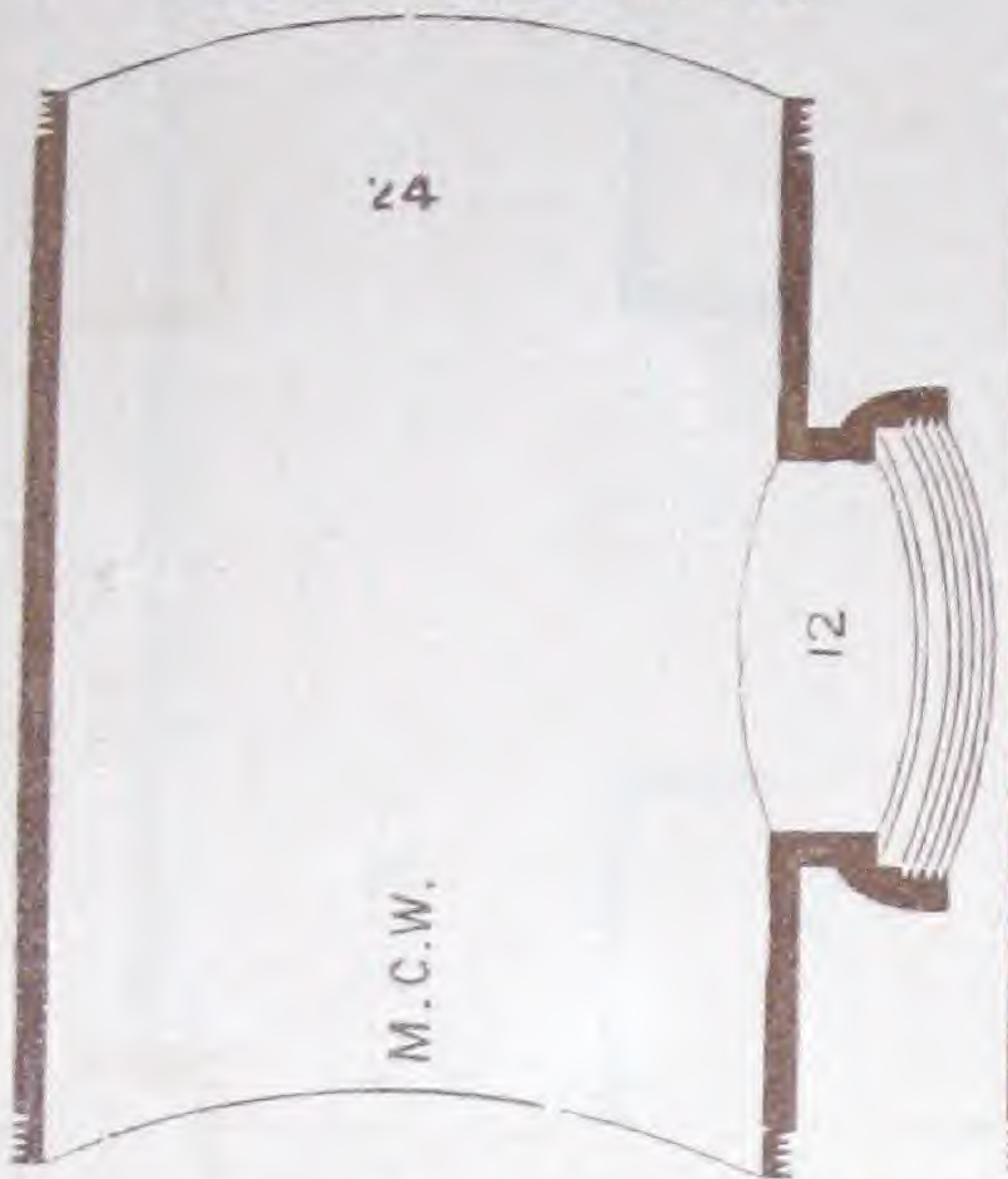
(CONTINUED ON PAGE 34.)

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

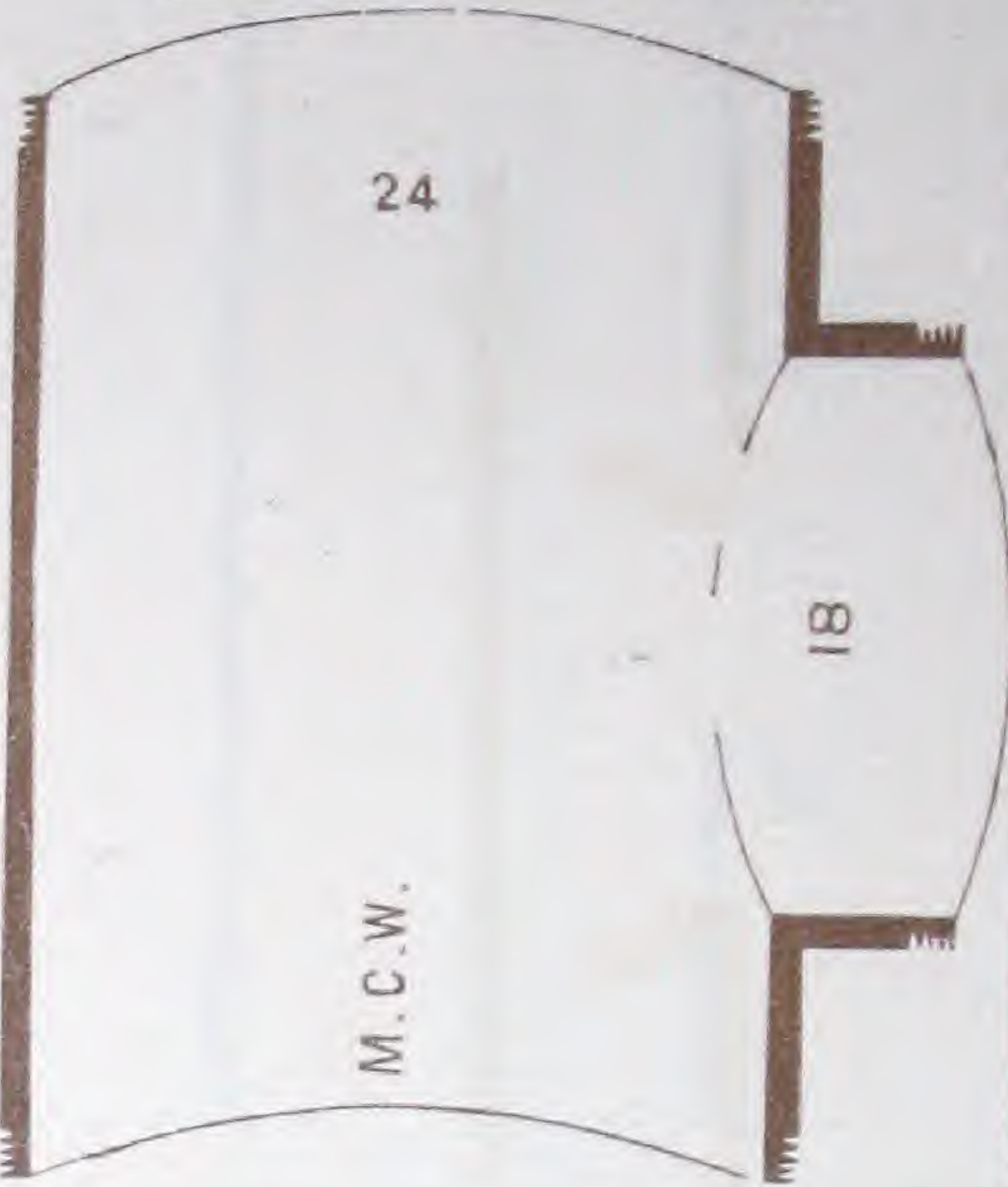
Continued from page 33.

ALL GLAZED.—UNGLAZED MADE TO ORDER

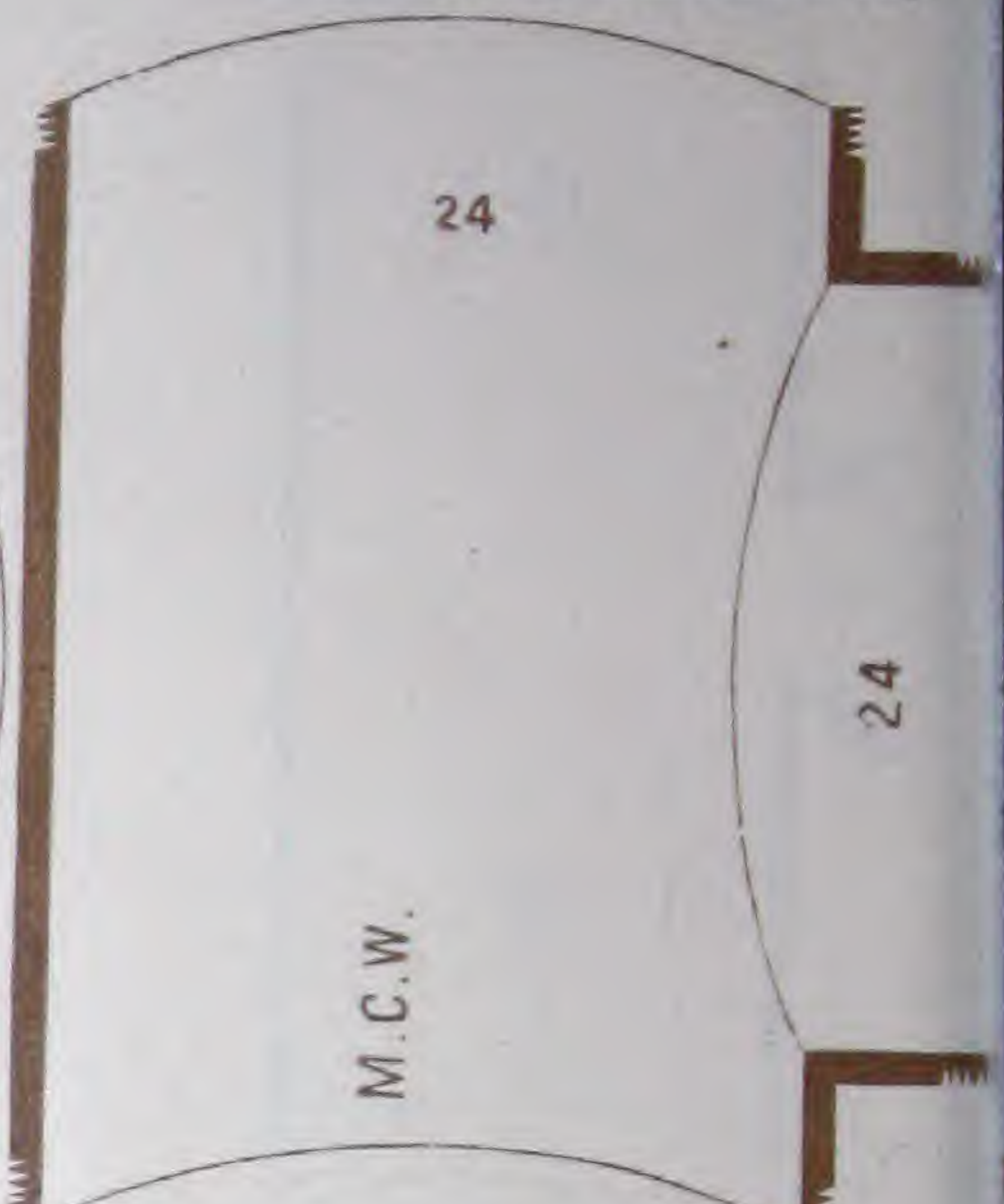
24x12 Sleeve T, with Socket Tap.



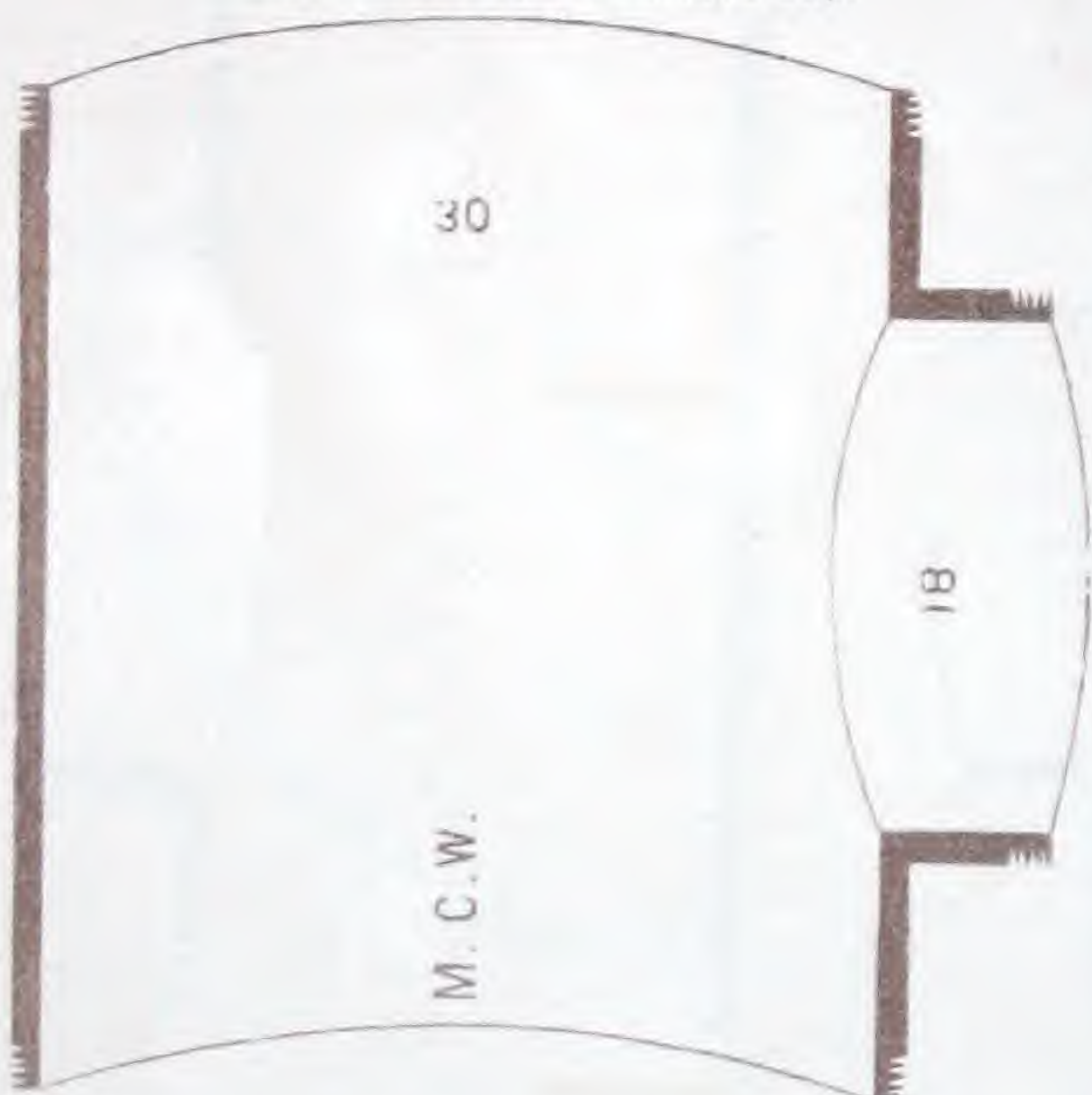
24x18 Sleeve T, with Sleeve Tap.



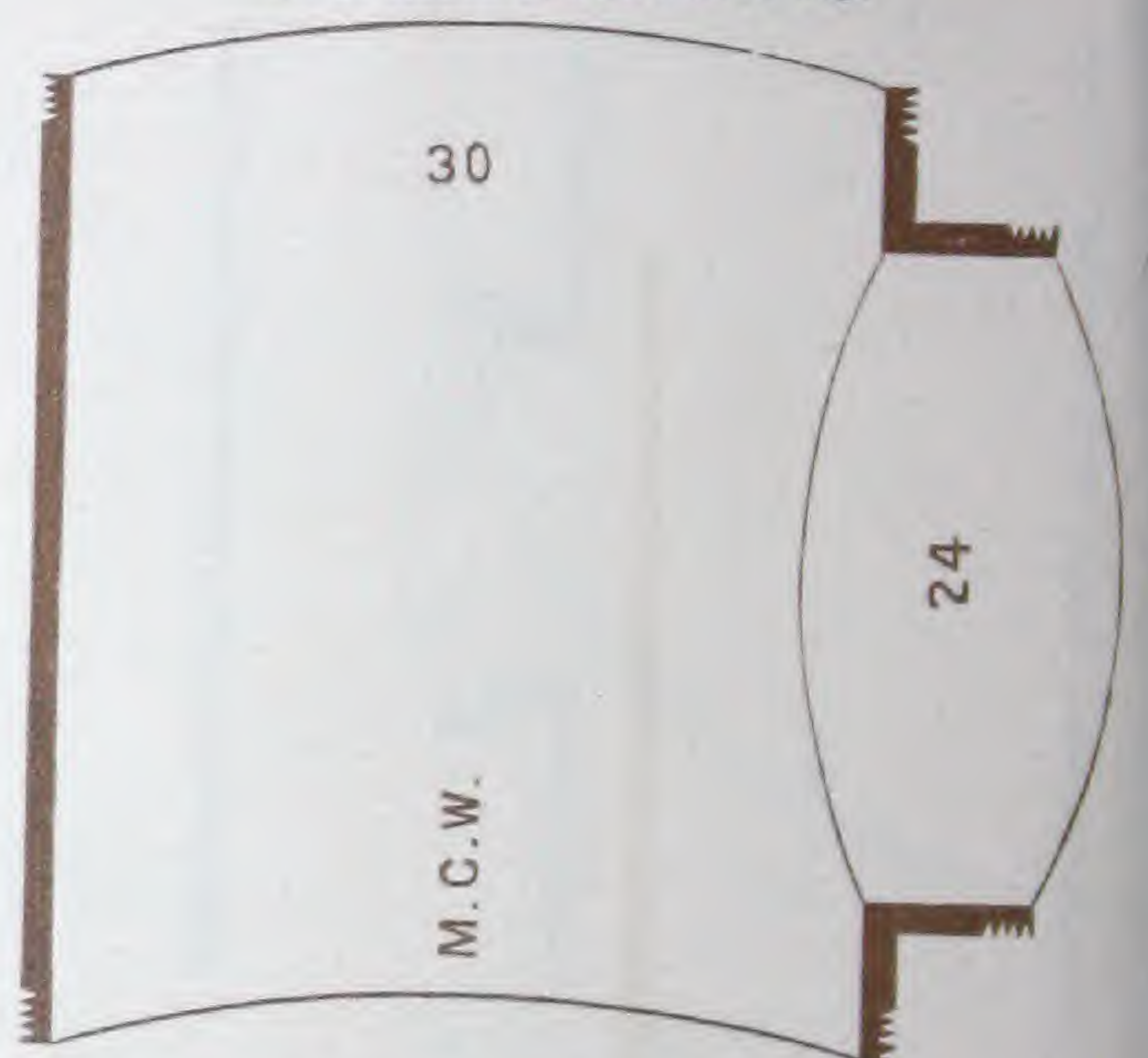
24x24 Sleeve T, with Sleeve Tap.



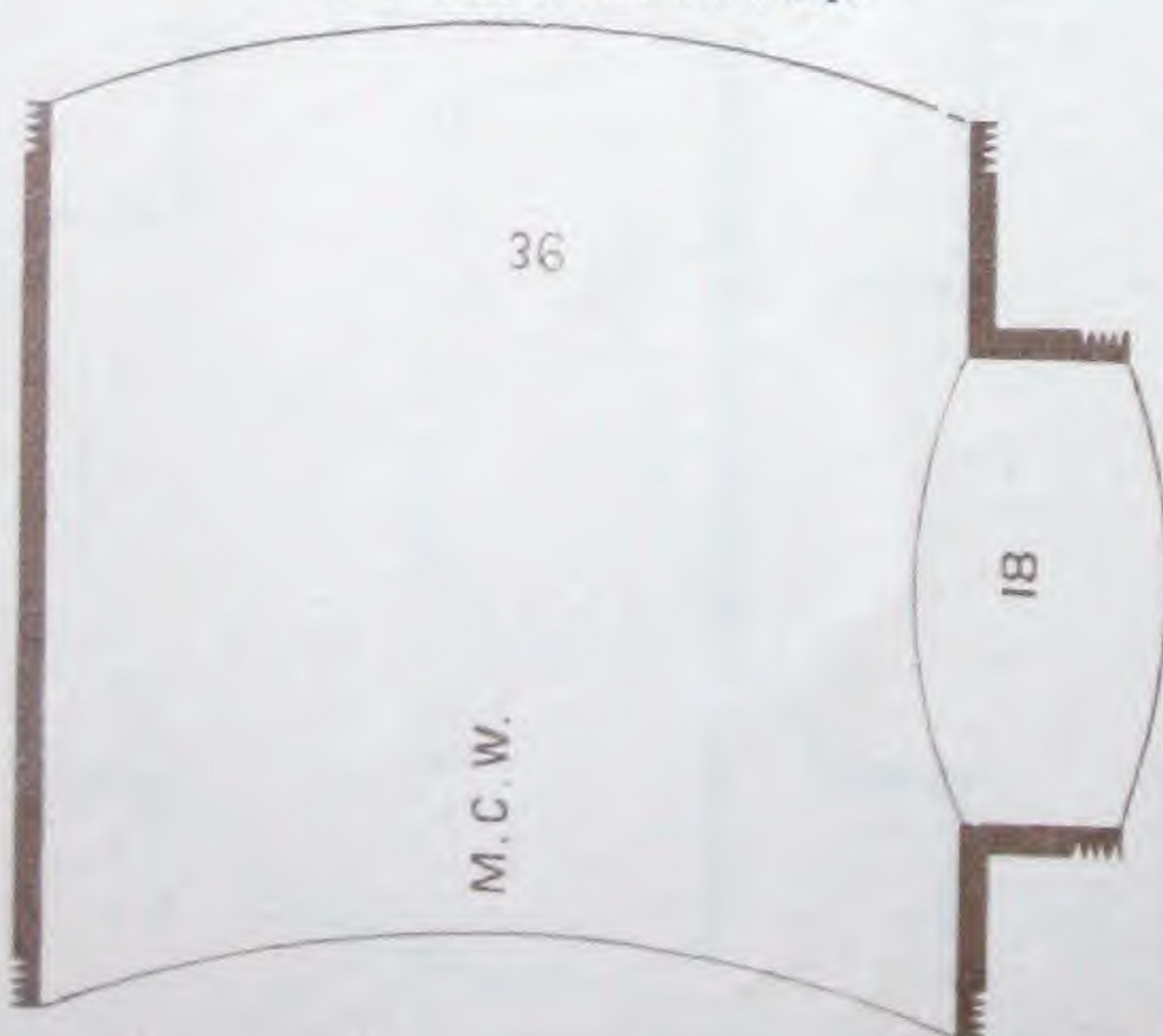
30x18 Sleeve T, with Sleeve Tap.



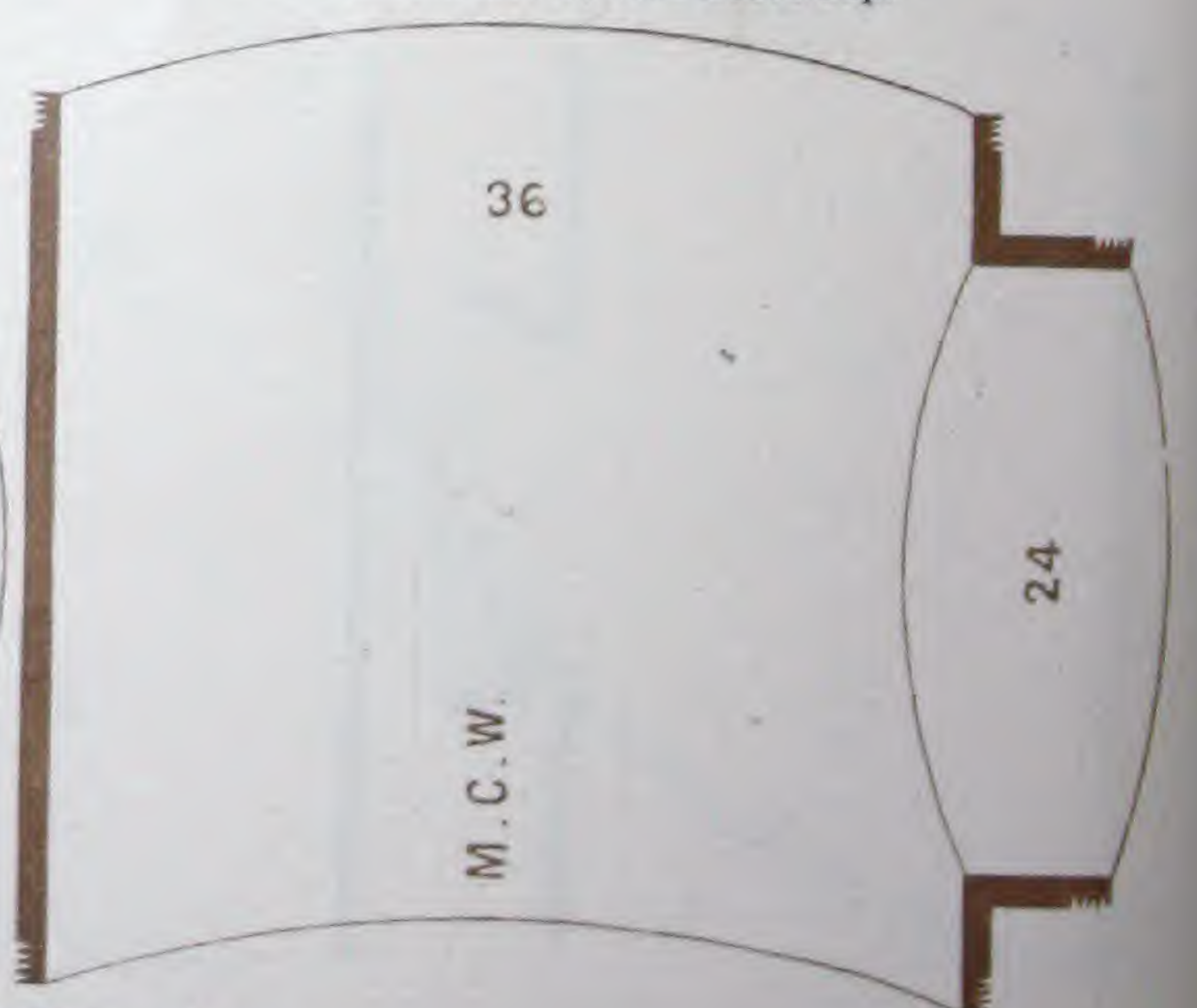
30x24 Sleeve T, with Sleeve Tap.



36x18 Sleeve T, with Sleeve Tap.



36x24 Sleeve T, with Sleeve Tap.



Series of T Branches.

— SCALE OF MEASURE THREE QUARTERS INCH TO THE FOOT. —
(CONTINUED ON PAGE 35.)

For weights, see page 35.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

Continued from page 34.

ALL GLAZED.—UNGLAZED MADE TO ORDER.

42x12 Sleeve T, with Socket Tap.

42

M.C.W.



42x24 Sleeve T, with Sleeve Tap.

42

M.C.W.

24

48x24 Sleeve T, with Sleeve Tap.

48

M.C.W.

24

The weight per lineal foot of the series of Round Pipe Flues with Metallic Banded Joints is about as follows:—4 inch, 8 lbs.—5 inch, 11 lbs.—6 inch, 15 lbs.—8 inch, 18 lbs.—10 inch, 24 lbs.—12 inch, 35 lbs.—15 inch, 45 lbs.—18 inch, 60 lbs.—21 inch, 90 lbs.—24 inch, 106 lbs.—30 inch, 157.—36 inch, 191 lbs.—42 inch, 233 lbs. 48 inch, 261 lbs.

— SCALE OF MEASURE THREE QUARTERS INCH TO THE FOOT. —

For advantages of using these see page 21.

* For prices, see Price List No. 248, which will be sent free on application.

* For Directions for setting up these see page 24.

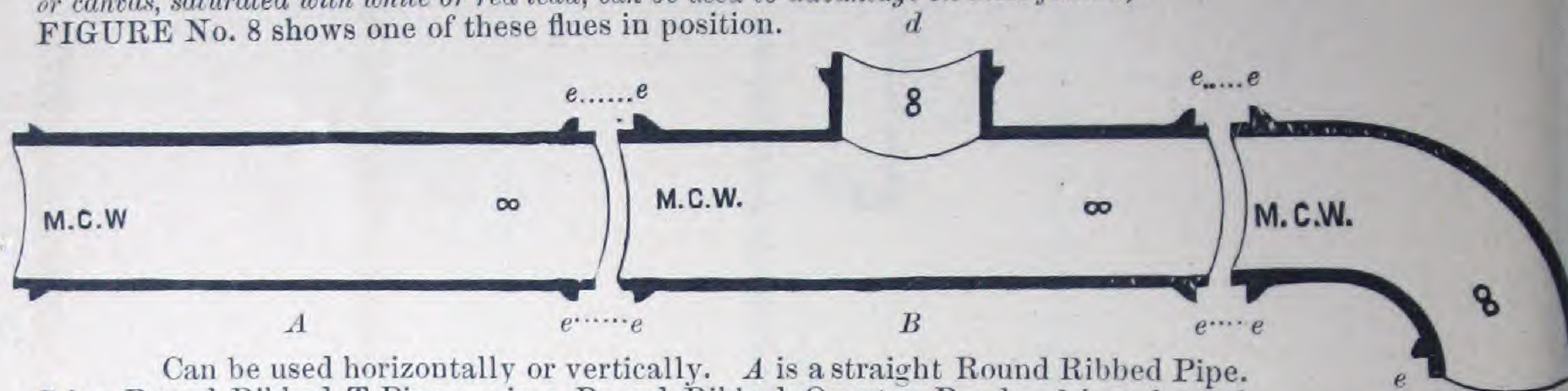
DIRECTIONS FOR SETTING Round Ribbed Pipe Flues with Metallic Banded Joints.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

This style of Flue Pipe is used where it is of the utmost importance that no smoke or gas escape from the joints, as in hot or green houses, chemical works etc.

The same general directions and the same description of metallic band as noted on page 29 paragraphs 6, 7 and 8, except that the full depth of socket formed between the ribs on the ends of the pipes should be filled to the dotted line with either mortar or cement. (*For special purposes either sulphur, or pitch or canvas, saturated with white or red lead, can be used to advantage on these joints.*)

FIGURE No. 8 shows one of these flues in position.



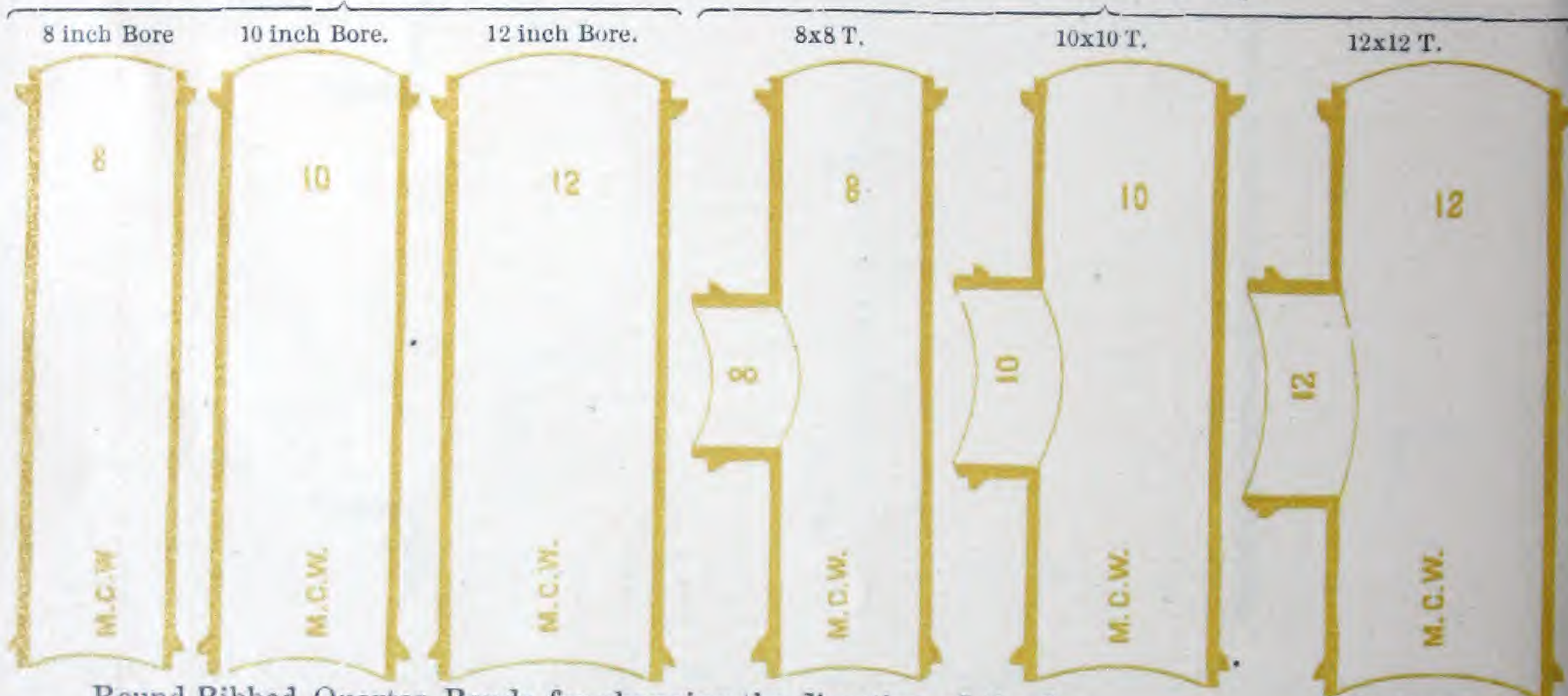
Can be used horizontally or vertically. *A* is a straight Round Ribbed Pipe. *B* is a Round Ribbed T Pipe. *c* is a Round Ribbed Quarter Bend. *d* is a lateral opening in T pipe *B* for cleaning out dust, etc., or receiving a side flue. *e* ribs to confine the bed of mortar. Use same kind of metallic bands as mentioned in paragraph 6, page 29, viz.:—

STANDARD PATTERNS AND SIZES OF Round Ribbed Pipe Flues with Metallic Banded Joints.

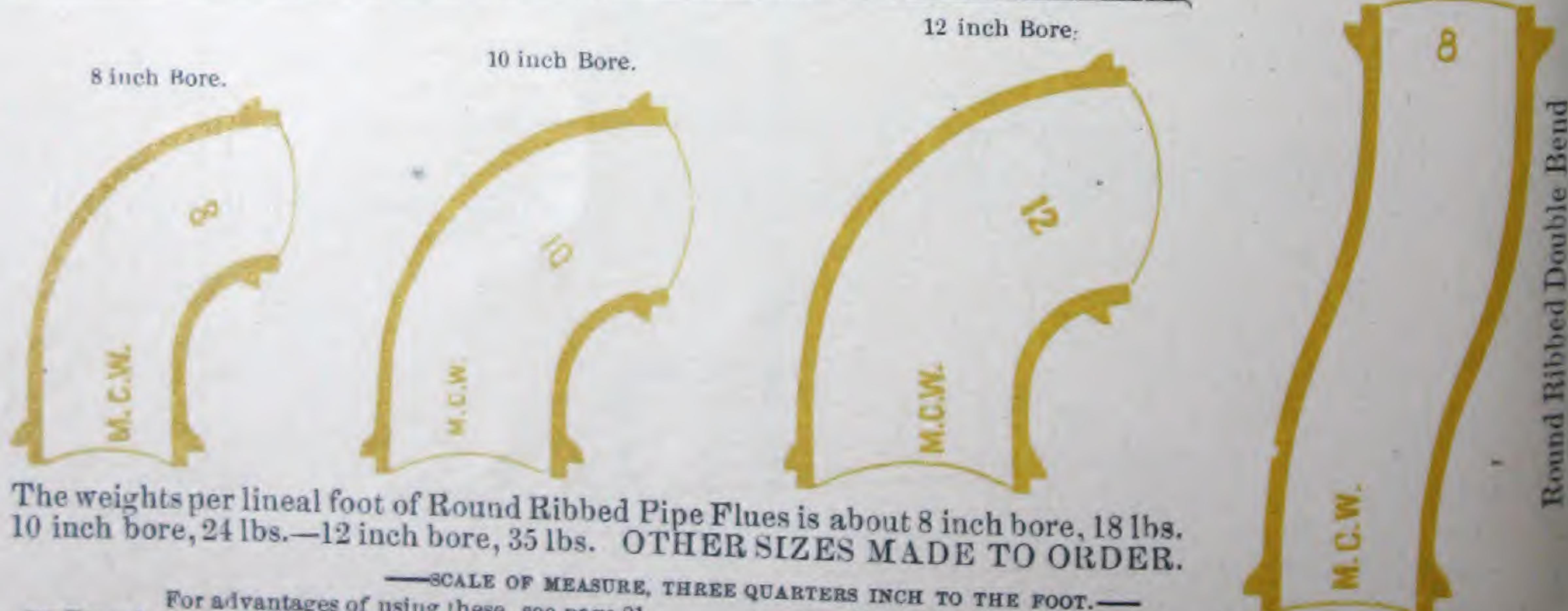
MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

Straight Round Ribbed Pipe.

Round Ribbed T Pipe.



Round Ribbed Quarter Bends for changing the direction of the flue.



The weights per lineal foot of Round Ribbed Pipe Flues is about 8 inch bore, 18 lbs. 10 inch bore, 24 lbs.—12 inch bore, 35 lbs. OTHER SIZES MADE TO ORDER.

—SCALE OF MEASURE, THREE QUARTERS INCH TO THE FOOT.—

For advantages of using these, see page 21.

For prices see Price List No. 243, which will be sent free on application.

For Directions for setting up these, see page 36.

DIRECTIONS FOR SETTING ROUND PIPE FLUES FOR BOILER OR FURNACE STACKS.

Manufactured by the Moorhead Clay Works, Philadelphia.

These flues are of a cylindrical shape and in three foot sections, they are of extra thickness of material, and holes (*a-a a-a* in figure No. 9.) are sunk in the ends of each section to receive iron dowels, or coupling pins.

Such dowels are used to prevent the sections from shifting their position on each other. Bands may also be used for this purpose as in figure No. 10.

These flues being perfectly round and smooth inside can be of much smaller bore area than brick or stone chimneys to produce the same power of draught.

They do not need as much time or expensive scaffolding to erect, and are the only stacks extant which will resist the ravages of weather, coal gas, acids, or wear and tear.

These Stacks are undoubtedly destined to supersede the present cumbersome, ponderous, shaky, and destructible brick or stone stack, and the perishable iron pipe stacks.

Figure No. 9.
Showing a vertical portion
a of half section. a



Figure No. 10.

Showing Round Pipe Flues
used for Boiler or Furnace
Stacks.

Referring to the figure No. 10.

A section of brick wall which may be used to enclose the stack for some distance upwards, when exposed to very high heats or heavy shocks.

B connection between fire bed and stack, or as a man-hole, for purposes of entrance.

C C the interior stack of pipes in sections of three feet each.

D D an outer case of the same kind of pipe. This can be disconnected entirely, or can be used where the inner stack is exposed to high heats or where a ventilating chamber between the outer and inner stack is desired.

E E E E metallic bands to make the joints perfectly tight and to prevent one section from slipping off the other.

F F stay wires attached to the band *E* and fastened to any convenient support.

DIRECTIONS FOR SETTING THE ROUND PIPE FLUES.

It is but necessary to firmly base the lowest section on a solid foundation and then place a thin bed of mortar or cement on the top edge thereof. Place an iron or copper dowel pin in the holes (*as in figure 9*), and bed then in mortar or cement in both sections of pipe. Place the next section upon this and plumb the two sections by inserting spalls or chips of brick or terra cotta in the cementing between the two sections and so continue on up, always cleaning out the surplus mortar or cement which oozes into the cavity of the pipe.

Around the outside of each joint place the metallic band, described in paragraph 6, page 29, and tighten it up. If the band is inclined to slip downward it can be stayed by driving small strips of iron (*cut from the bands*) through the band and between the sections of pipe.

If the stack is very high it can be stayed with light wires or rods.

This style of flues, being at present only made to order, there are no Standard Patterns and Sizes, but can be of any size bore (*either 6, 8, 10, 12, 15, 18, 21, 24, 30, 36, 42, 48 inches*, or length of section (*from 1 to 10 feet generally 3 feet*), and either glazed or unglazed.

Wind Caps, Hoods, Bonnets, etc., like on pages 19 and 20, can be made to order to fit these stacks.

For prices, see Price List No. 243, which will be sent free on application.

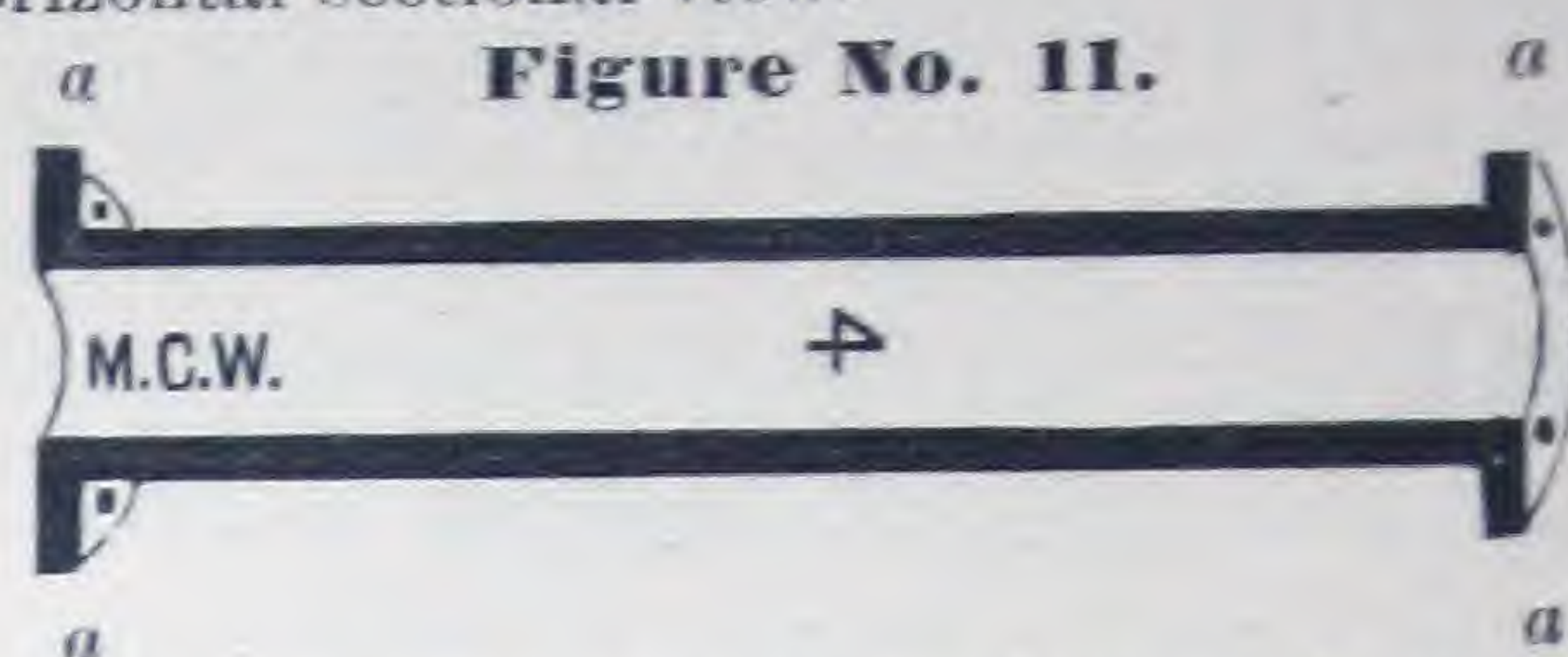


DIRECTIONS FOR SETTING ROUND PIPE FLUES WITH FLANGED JOINTS.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia;

This style of flue is advantageous among other uses for conducting steam, as from exhausts, etc., as it never rusts nor endangers surrounding woodwork.

Figure No. 11 shows a horizontal sectional view.



The sections (of any desired length generally three feet) are butted together and bolted through the flanges, using a gasket of gum or canvas saturated with white or red lead.

(Being only made to order there are no standard sizes of this series;) any bore 2 in., 3 in., 4 in., 5 in., 6 in., 8 in., 10 in., 12 in., 15 in., 18 in., 21 in., 24 in., 30 in., 36 in., 42 in., 48 in., can be furnished either glazed or unglazed, and the weights are about the same as noted on page 35.

DIRECTIONS FOR SETTING OBLONG FLUES WITH VERTICAL FLANGES.

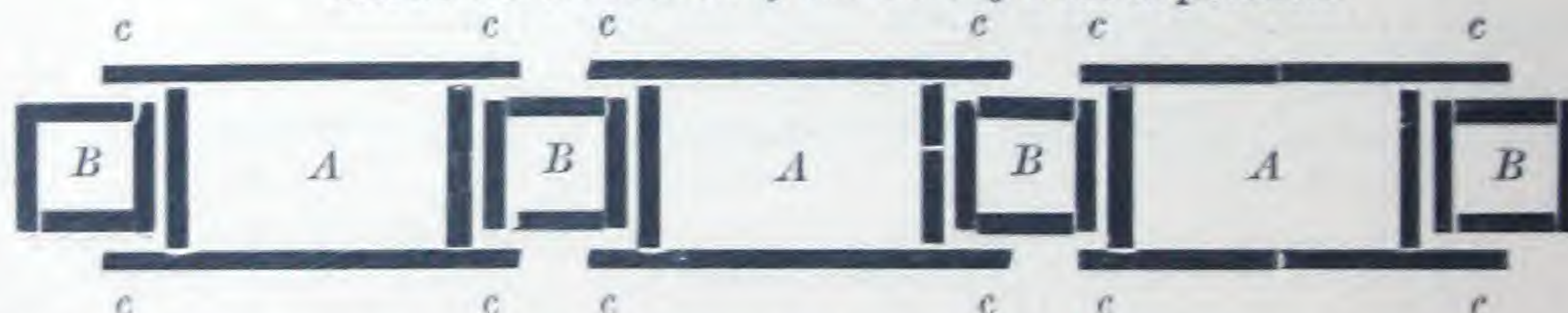
MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

This style of flue is of use where one or more flues run through a stud partition or through contracted walls of brick, etc.

The entire partitions between apartments, and even buildings, can be formed entirely of these flues, and when so used they form a guarantee against the spread of conflagrations, as well as a capital medium for either heating or ventilation, and also a guard against the intolerable nuisance of "damp" or "mouldy" walls.

Figure No. 12.

Shows a cross section of the Oblong Flue in position.

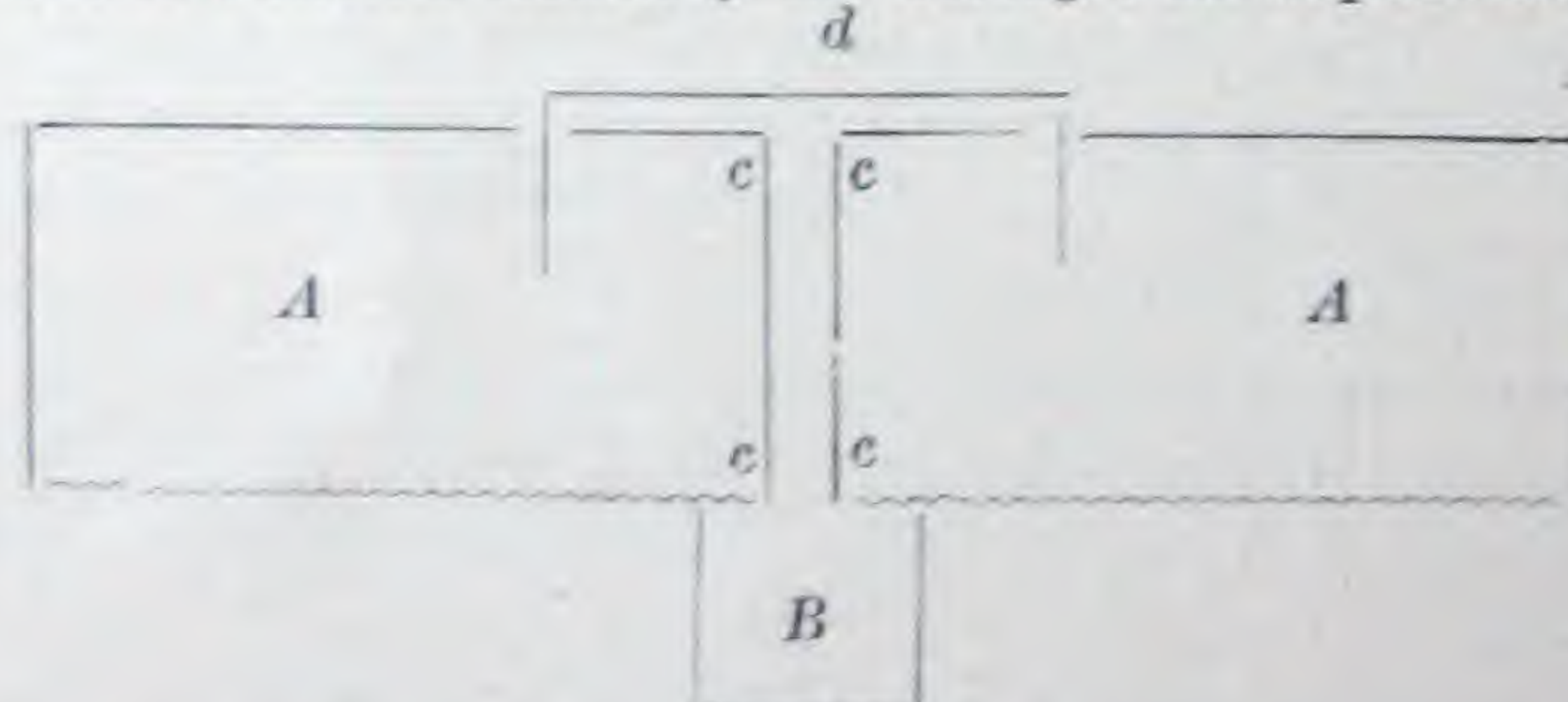


A A A the "Oblong Flue." *B B B* the uprights of wood, or metal, or brick, to keep the flue in position. *c-c-c-c-c* the flanges forming part of the flue and clasping half of the width of *B*.

The setting of these will readily suggest itself. We have only to observe that the upright *B*, if of brick, should break joints with the flue sections, and all around *B* should be well filled in with mortar or cement. *B* must be firmly secured at top and bottom. The outside surface, or faces, of *A* can be roughened, or even grooved, to receive a plaster coat.

Figure No. 13.

Shows a vertical section of the Oblong Flue in position.



A A the "Oblong Flues." *B*, the upright of metal or wood. *c-c* the flanges forming part of the flue *A* and clasping half the width of the upright *B*. *d* an iron coupling when desired to strengthen the wall by clasping *A* to *A*.


This style of flue being only made to order, can be of any desired dimension of cross section, or length of section (generally 1 foot), or thickness of material (say $\frac{3}{4}$ inch), and can be made with register or stove holes, or angles, etc., the same as for our "Oval Flues with Butt Joints," for which see succeeding pages.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

Terra Cotta is practically a very slight radiator of heat, that is whilst there may be passing through its cavity a heat which would instantly ignite wood, yet the outward surface of such flues might not be too hot to hold the hand upon and hence it is more safe for surrounding wood-work to approach and touch flues of terra cotta than any other available material, but costly experience teaches that even under the most favorable circumstances, wood and heat are very dangerous neighbors, and that even where precaution has secured safety, it is better to double those precautions and "take a bond of fate." Hence in the following directions we have in most cases advised an open and free space all around these flues. A free circulation of cold air between heated and endangered surfaces has been found to be the best safeguard against fire.

1st. If these flues are to be used in brick or stone walls merely for the purposes of ventilation or the conveyance of ordinary heats, such as fire from stove or furnace, there need be no space left between the flue and wall (*see figure 1 on page 2*), and the wall plaster facing can be applied directly to the outside surface of the flue, or to theathing carried across the same. (*For special purposes we make to order a flue with one or more faces grooved to receive and keep the plaster.*) But if very high heats are to be carried through the flues, or if the plaster facing of the walls is frescoed or otherwise ornamented, it is advisable, in order to prevent the expansion and contraction of the hot and cold air from cracking such face, to leave an open space of one or more inches between the flue and the brick or plaster; or by leaving such space all around the flue it forms a valuable extra chamber for ventilation, as the heat engendered by the smoke ascending in the flue produces an upward draught in said chamber. In such case the stack of flues should be steadied by bricks projecting from the wall, such bricks should be at intervals of 6 feet or less and placed opposite each other, as in

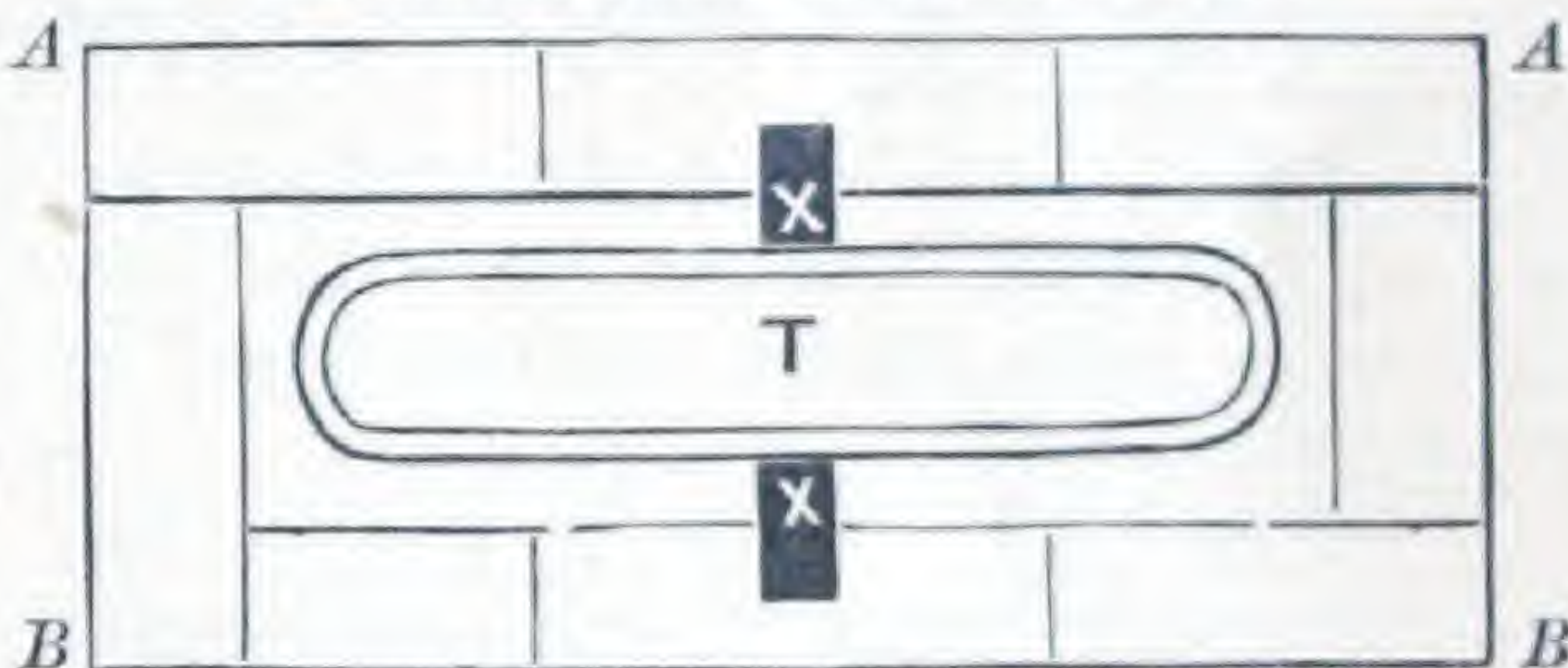
Figure No. 14.

2d. When it is desired to use these flues in a stud partition *B*  *B* or a frame wall, the open space must be increased to as much over 2 inches as possible (*see figure No. 15*), and great care must be taken that no wood-work touch the flue and to make the jointing between the sections of flues perfectly tight with mortar or cement and also to leave, in the open space between flue and walls, a free ingress at the bottom, and free egress at the top for the entrance and exit of cold air. Neglect of these precautions may endanger such partitions or frame walls, either from the use of brick, or terra cotta, or other flues.

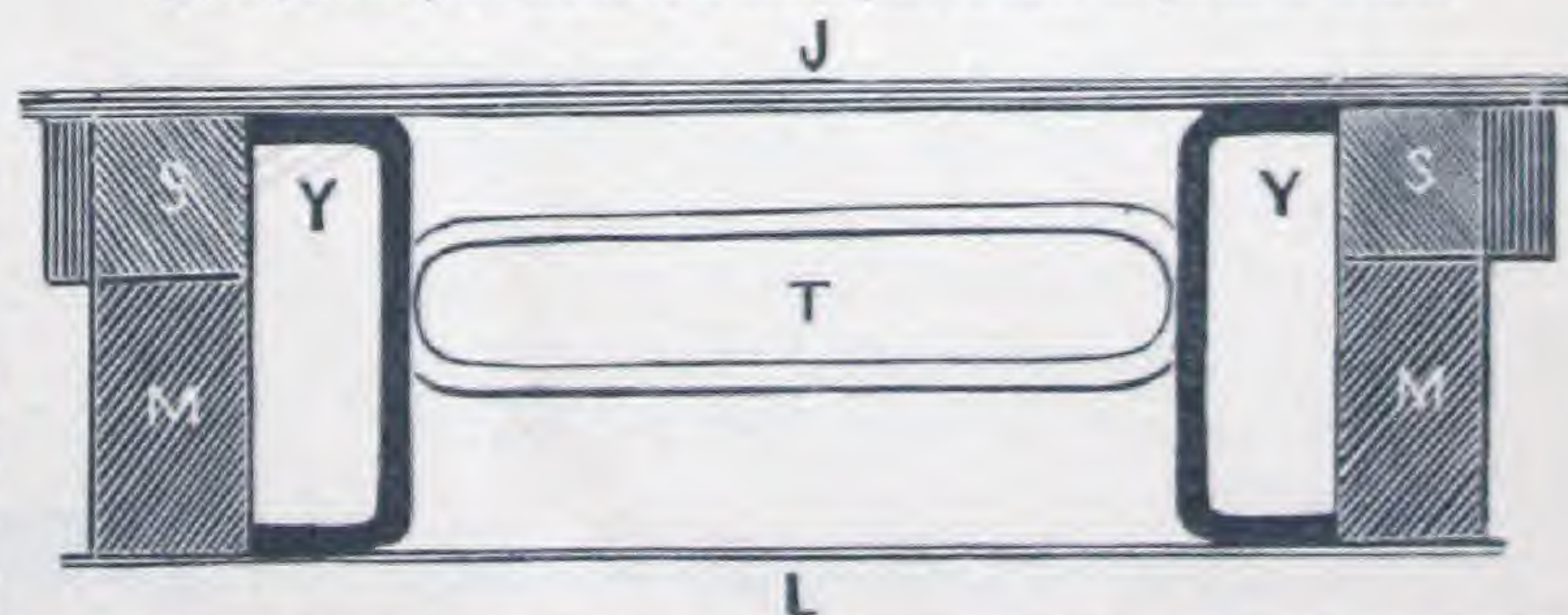
3d. In all cases the flues are jointed together by butting the joints, or ends of each section against each other, with a slight layer of mortar between, plumb the stack as you progress, by inserting chips or spalls of

(CONTINUED ON PAGE 40.)

Showing our Terra Cotta Oval Flue with Butt Joints enclosed in a brick wall.



Shows a cross sectional view of our Terra Cotta Oval Flue with Butt Joints, set within a stud partition or frame wall.



Continued from page 39.

4th. Wherever the stacks of flues stands free, care must be taken to stay it sufficiently to prevent it being thrown out of line by excessive settling of the edifice, or by violent shocks as previously explained.

5th. In very thin walls of brick a prejudice has been aroused against the use of these flues on the ground that the space used for the flue weakens the wall. This objection can be readily obviated by using flat stays of metal catching on the inside of the terra cotta flue, and carried as far into the brick wall as desired, as in Figure 16.

To illustrate the foregoing directions we here give

PP shows beams, braces, struts, floor, or other supports for starting the terra cotta flue *W T T T S N*, at any desired point.

W shows "Bottom Flue," with closed lower end to prevent sparks coming in contact with the supporting wood work, and also with the opening facing the reader. This opening is useful for cleaning out soot or dust, or to gain access to the interior of the chimney. It can be closed with a metallic stopper, removable at will.

X X X X show bricks as explained in figure 14, projecting from the surrounding wall, and gently touching the flue, to steady it; they should break joints with the joint of the flue.

S shows "Register Hole Flue" for the emission of heat or entrance of ventilation. This piece reversed acts as a top piece for a heat stack of flues.

N shows "Stove Hole Flues" for the entrance of stove pipes.

T T T T shows "Angle Flues" for directing the flue from a straight line without the danger of being choked or contracted by unskillful workmen.

W X T X T X T X T S N shows the full line of terra cotta flues with angles, attachments, etc.

R R and *K K* shows the vacant space between the flue and the surrounding brick or wood-work to protect from fire, or cracking, and to serve as a ventilating chamber.

M M studding for reception of lath and plaster.

Y Y stay pieces of metal to steady the flue (as explained in figure No. 15) touching or fastened to the studding or lathes or weather boarding, and resting between the sections of flues. It can be made of any convenient piece of wire, hoop, or other iron.

F F cross beam to support brick work when desired, to form the chimney projecting beyond the roof.

I I I I cement well sloped up to shed water (as explained on page 2.)

E Terra Cotta Chimney Top (see on preceding pages).

These Tops can also be used in connection with these Flues, without the use of a single brick (see on page 2 figure 2.)

These Flues can be readily cut to any size or shape or pierced for any size hole by using a sharp cold chisel and a light hammer and cutting gradually around the desired lines.

Figure No. 16.

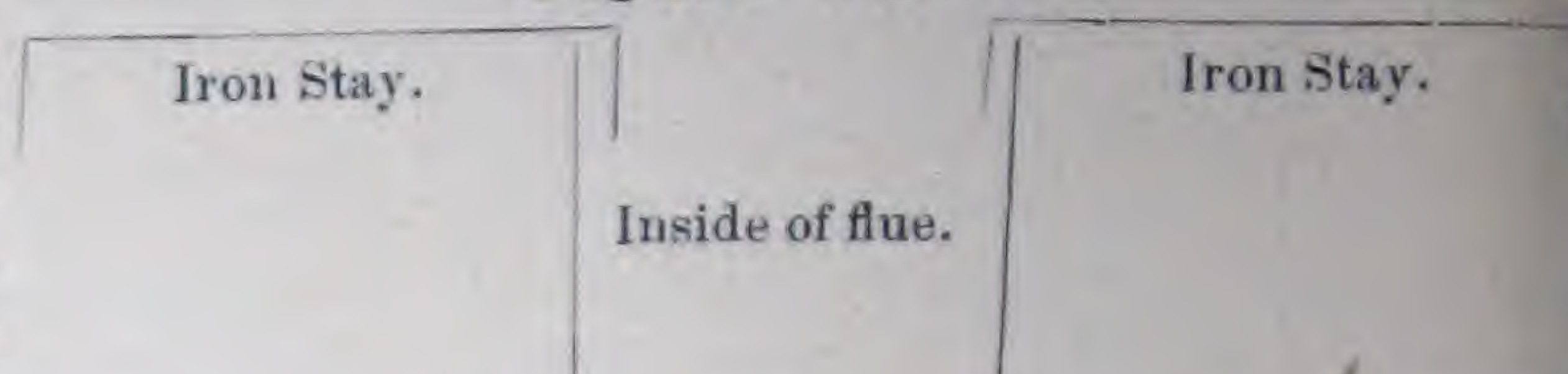
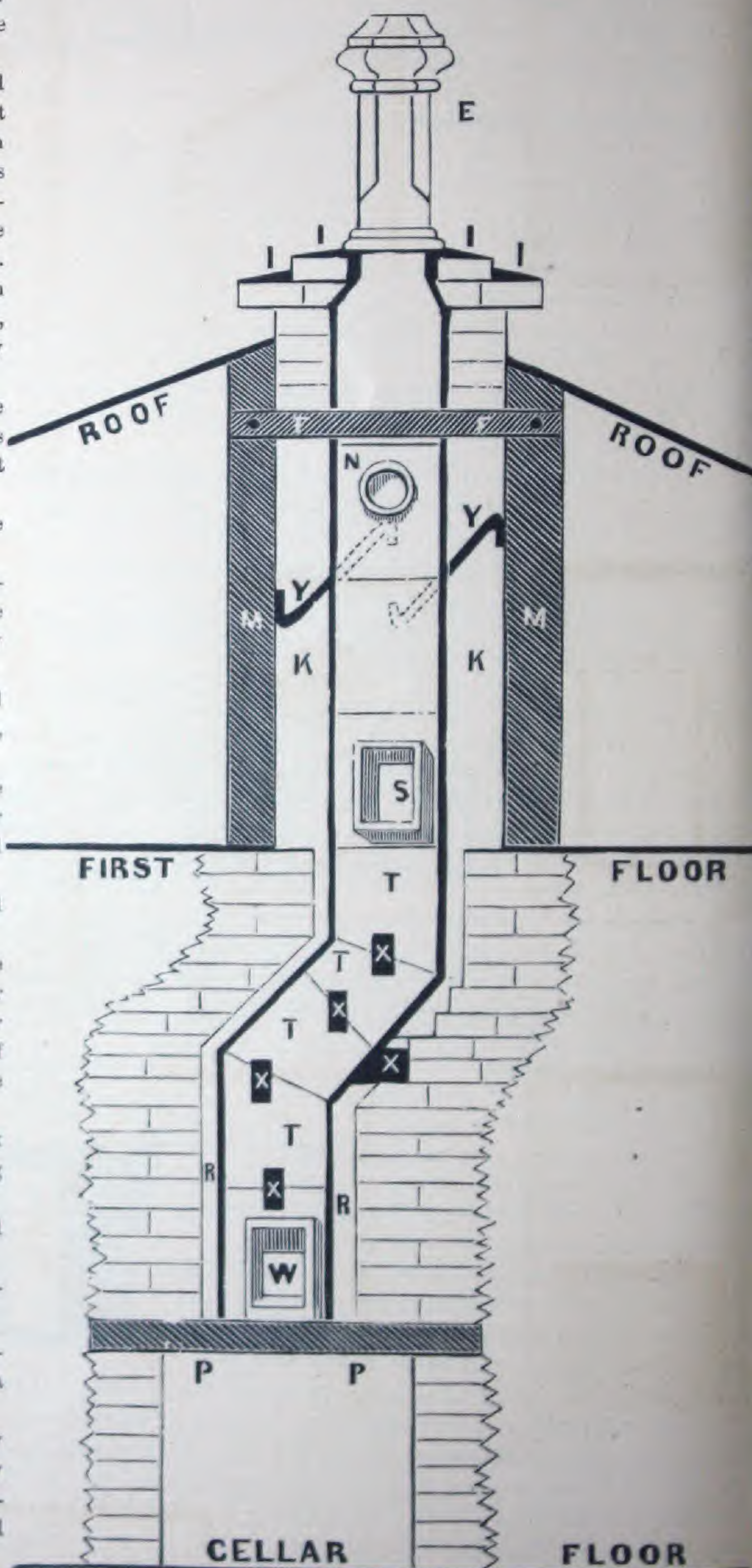


Figure No. 17.



For advantages of using these, see page 21.

For prices, see Price List No. 243, which will be sent free on application.

For Patterns and Sizes, see succeeding pages

STANDARD PATTERNS AND SIZES OF OVAL FLUES WITH BUTT JOINTS.

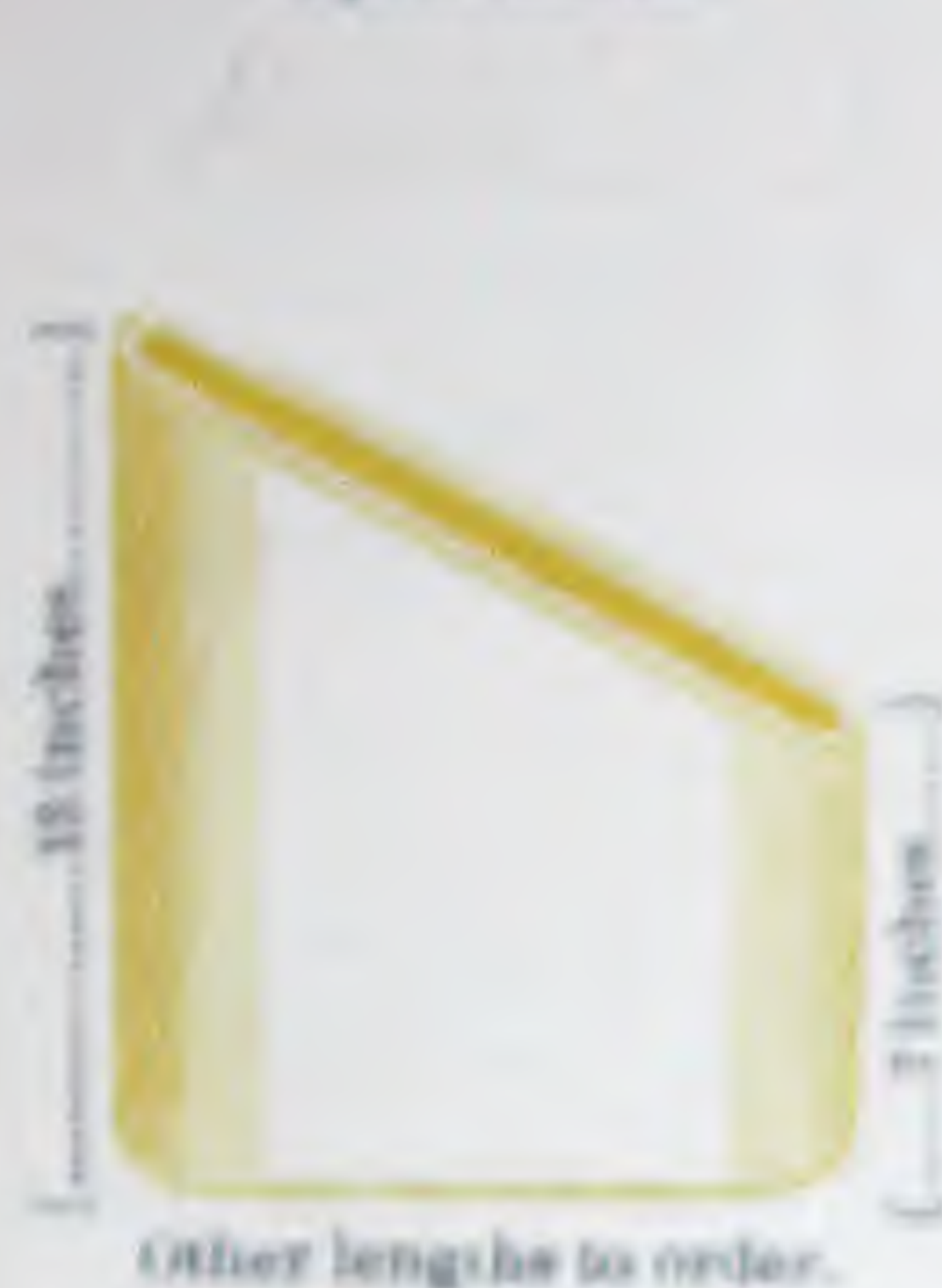
MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

This series is all unglazed. We can make them either glazed inside or outside, or both.

PLAIN FLUE.
4½x13 inches.



ANGLE FLUE.
4½x13 inches.



Other lengths to order.

REGISTER FLUE.
4½x13 inches.



Inside diameter of Register hole is 12x8 inches.
(Other sizes to order.)

STOVE HOLE FLUE.
4½x13 inches.



Inside diameter of Stove hole is 6½ inches.
(Other sizes to order.)

DOUBLE REGISTER FLUE.
4½x13 inches.



Inside diameter of each Register hole is 12x8 inches.
(Other sizes to order.)

DOUBLE STOVE HOLE FLUE.
4½x13 inches.



Inside diameter of each Stove hole is 6½ inches.
(Other sizes to order.)

ROUND TOP FLUE.
Inside diameter of the top 4 inches.
Outside " " 4 " "



SQUARE TOP FLUE.
Inside diameter of the top 7½ in.
Outside " " 8½ " "



BOTTOM FLUE.
4½x13 inches.



Inside diameter of clean out opening is 12x8 inches.

Y FLUE.
4½x13 inches.

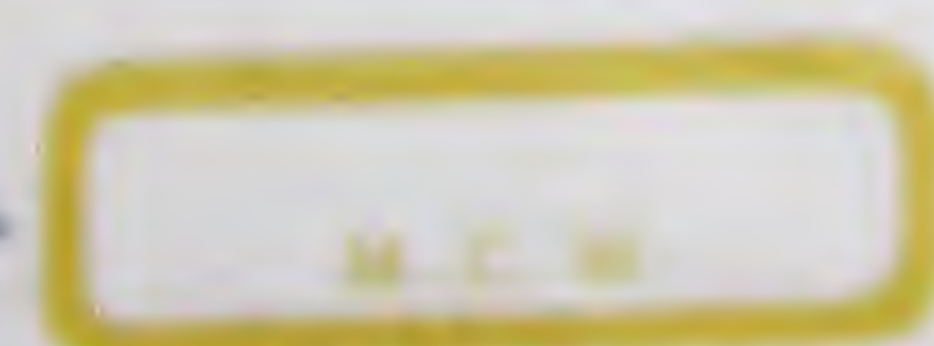


V FLUE.
4½x13 inches.



—SCALE OF MEASURES IS ONE INCH TO TEN FEET—

18 inches.



Outside diameter 4½x13 inches.
Thickness of material about ½ inch.
Weight per linear foot about 16 lbs.

Dimensions of Patterns on this sheet are—
Length of section (except when stated) 18 inches.
Inside diameter 3½x12 inches.

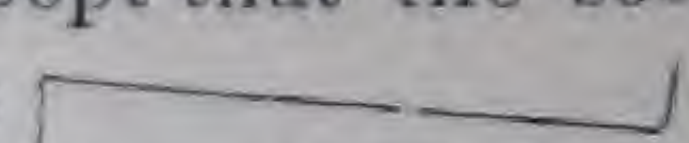
(CONTINUED ON PAGE 42.)

DIRECTIONS FOR SETTING OVAL FLUES WITH SOCKET JOINTS.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

These flues have the same advantages as are mentioned on page 39, and are specially adapted for running ventilation and hot or cold air, etc., through stud partitions, or frame walls, and the

DIRECTIONS FOR SETTING

are the same as mentioned in paragraphs marked 2, 3, and 4 on pages 39 and 40, except that the sockets must be well packed with mortar or cement, and the line of flue can be stayed by wires thus  hooked into the lip of the socket, and attached to any convenient point (thus dispensing with the hoop iron laid across the joints).

STANDARD PATTERNS AND SIZES OF OVAL FLUES WITH SOCKET JOINTS.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

SOCKET FLUE.
4½x13 inches.



ANGLE FLUE
4½x13 inches



Other lengths to order.

REGISTER FLUE.
4½x13 inches.



Inside diameter of Register hole is 12x8 inches (Other sizes to order.)

STOVE HOLE FLUE.
4½x13 inches.



Inside diameter of Stove hole is 5¼ inches. (Other sizes to order.)

DOUBLE REGISTER FLUE.
4½x13 inches.



Inside diameter of each Register hole is 12x8 inches. (Other sizes to order.)

DOUBLE STOVE HOLE FLUE.
4½x13 inches.



Inside diameter of each Stove hole is 5¼ inches. (Other sizes to order.)

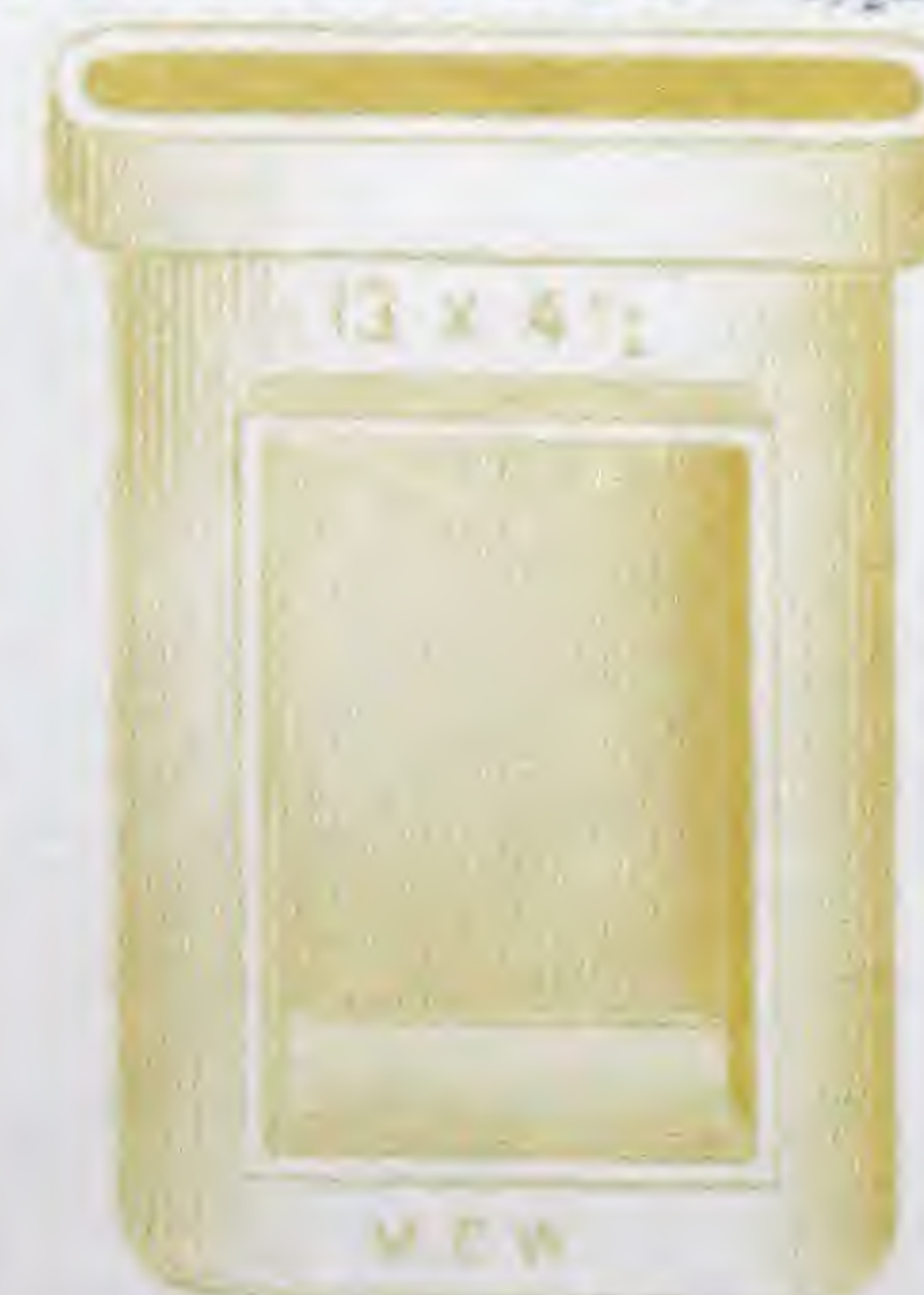
ROUND TOP FLUE.
Inside diameter of the top 6 in.
Outside " " 8 "



SQUARE TOP FLUE.
Inside diameter of the top 7½ in.
Outside " " 8¾ "



BOTTOM FLUE.—4½x13 inches.



Inside diameter of clean out opening is 12x8 inches

Y FLUE.—4½x13 inches.

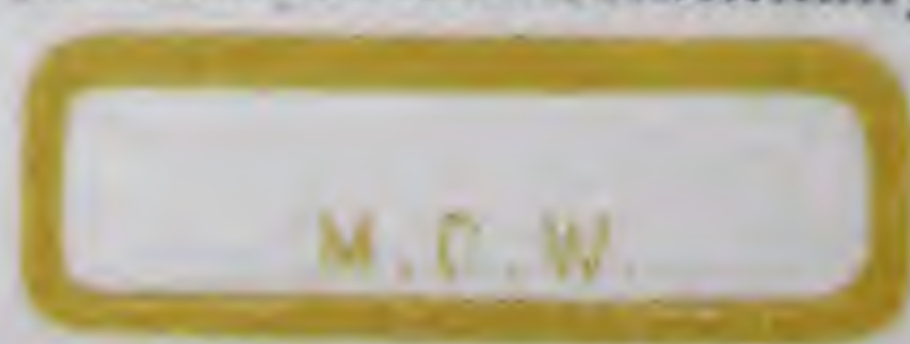


V FLUE.—4½x13 inches.



—SCALE OF MEASURE IS ONE INCH TO THE FOOT—
[.....13 inches.....]

Dimensions of Patterns on this page are—
Length of section (except when stated) 18 inches, not including the socket which adds one inch to the length over all.



4½ inches

Diameter, inside 3½x12 inches
outside 4½x13 "
Weight per lineal foot 20 lbs


DIRECTIONS FOR SETTING OVAL FLUES WITH METALLIC BANDED JOINTS.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

These flues are used for the same purposes as Oval Flues with Socket Joints, but can be put in more contracted places. They require no more space than Oval Flues with Butt Joints, and the

DIRECTIONS FOR SETTING

are the same as mentioned on pages 39 and 40, with the addition that a layer of mortar or fire clay be spread over the inside of the metallic bands (as well as between the sections), so that when drawn up tightly with the screw (as represented in the cut) the flue joint will not only be imbedded, but entirely surrounded with a case of mortar or fire clay. This renders the joints so entirely safe that they can be securely used anywhere.

These bands are of galvanized iron or tin about $1\frac{1}{2}$ or 2 inches wide with ears turned up at the ends thus  to receive holes punched through the ends or ears to receive a one-eighth inch bolt of about $1\frac{1}{2}$ inches long; or the bands can be made to buckle (see *W X cut No. 6, and sixth paragraph, all on page 29*), and thus dispense with the ears and bolts and make a more compact job.

We furnish such bands when desired, but they can be economically procured on the spot.

These flues are made of either $4\frac{1}{2}$ x 13 outside diameter,

7 x 14 " "

9 x 18 " "

They are identical in shape, measure, weight, and all other particulars with the Oval Flues with Butt Joints (see *patterns on pages 41, 42, and 43*), with the exception of being joined together with the galvanized iron or other metallic band around the joint, as above described.

Figure No. 18 shows a stack of these Oval Flues with Metallic Banded Joints in position.

The lowest section being a "Bottom Flue," with the opening to clean out or gain access to the stack.

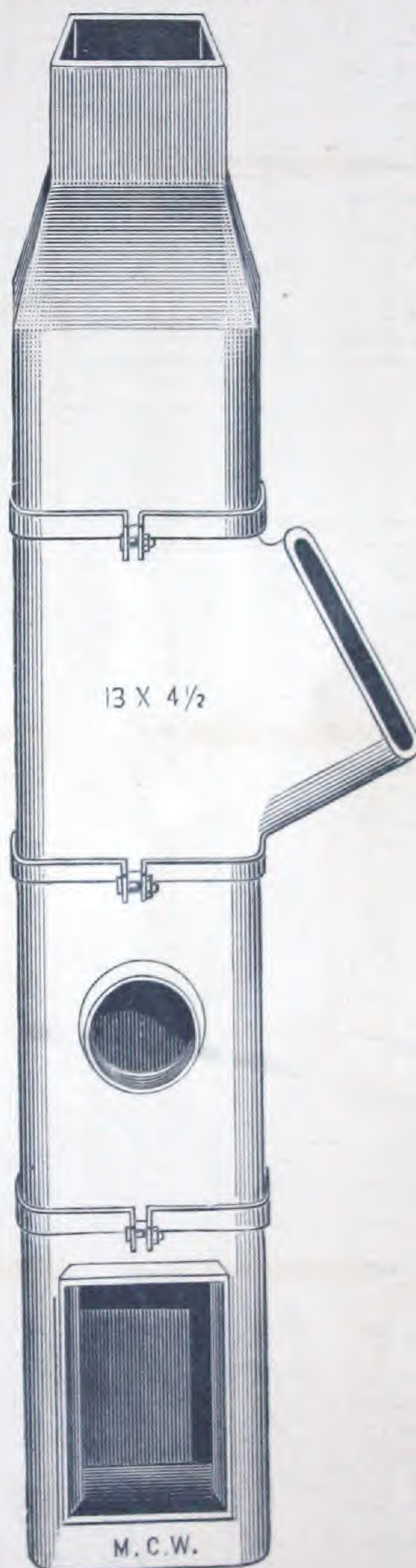
Our next section shows the "Stove hole for the insertion of metallic stove or ventilating apparatus.

The next section shows a "Y Flue," for joining two flues in one.

The next section shows a "Top Flue," for sustaining our Terra Cotta Chimney Tops.

Each section shows the metallic band as described above.

Figure No. 18.



— SCALE OF MEASURE ONE INCH TO THE FOOT —

For prices, see Price List No. 243, which will be sent free on application.

For Patterns and Sizes, see pages 41, 42, and 43.

TERRA COTTA STOVE CASES OR THIMBLES.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, PHILADELPHIA.

Terra Cotta being nearly a non-conductor and non-radiator of heat, these cases are very useful, and, in many cases, indispensable to guard, from the danger of conflagration, surrounding wood-work (*such as the lining of rooms, stud partitions, floors, roofs, etc.*), where metallic stove pipes, steam, or hot air conductors, etc., pass through. Brewers and many others also use them for their cold air ducts with advantage. Many persons ignorant of the difference of material, use the common red earthenware cases. These last are very soft, partially burned, and breakable, and fall out in a few years, to the danger of the building in which they are used.

In selecting Stove Cases, choose those at least $\frac{1}{4}$ inch more in diameter than the outside diameter of the pipe, it is to receive, as the expansion of the metal pipe when heated is likely to burst the case.

In using stove cases do not *force* the case into its place nor force the metallic pipe into the case, as an unequal straining may break the case. They should in all cases fit loosely, or only be tightened by the use of mortar, cement, or fire clay.

We have 7 different bores, and 7 different lengths of each bore (*as engraved on each of the following cuts*) or 49 sizes in all. (*Other sizes will be made to order.*) The measures mentioned are in the clear.

The thickness of material is about $\frac{1}{4}$ to $\frac{1}{2}$ inch, twice which is to be added to the bore to find the outside diameter. The rib or lip projects beyond the case about $\frac{1}{4}$ inch all around. One illustration of the use of these cases can be seen at *H* in figure 6, on page 29.

STANDARD PATTERNS AND SIZES OF STOVE CASES OR THIMBLES.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, PHILADELPHIA.



(CONTINUED ON PAGE 47.)

Continued from page 46.

Length 4 inches. Bore $4\frac{1}{2}$ in. M.C.W.	Length 6 inches. Bore $4\frac{3}{4}$ in. M.C.W.	Length 8 inches. Bore $4\frac{3}{4}$ in. M.C.W.	Length 9 inches. Bore $4\frac{3}{4}$ in. M.C.W.	Length 10 inches. Bore $4\frac{3}{4}$ in. M.C.W.	Length 12 inches. Bore $4\frac{3}{4}$ in. M.C.W.	Length 14 inches. Bore $4\frac{3}{4}$ in. M.C.W.
Length 4 inches. Bore $5\frac{1}{4}$ in. M.C.W.	Length 6 inches. Bore $5\frac{1}{4}$ in. M.C.W.	Length 8 inches. Bore $5\frac{1}{4}$ in. M.C.W.	Length 9 inches. Bore $5\frac{1}{4}$ in. M.C.W.	Length 10 inches. Bore $5\frac{1}{4}$ in. M.C.W.	Length 12 inches. Bore $5\frac{1}{4}$ in. M.C.W.	Length 14 inches. Bore $5\frac{1}{4}$ in. M.C.W.
Length 4 inches. Bore $5\frac{3}{4}$ in. M.C.W.	Length 6 inches. Bore $5\frac{3}{4}$ in. M.C.W.	Length 8 inches. Bore $5\frac{3}{4}$ in. M.C.W.	Length 9 inches. Bore $5\frac{3}{4}$ in. M.C.W.	Length 10 inches. Bore $5\frac{3}{4}$ in. M.C.W.	Length 12 inches. Bore $5\frac{3}{4}$ in. M.C.W.	Length 14 inches. Bore $5\frac{3}{4}$ in. M.C.W.
Length 4 inches. Bore $6\frac{1}{4}$ in. M.C.W.	Length 6 inches. Bore $6\frac{1}{4}$ in. M.C.W.	Length 8 inches. Bore $6\frac{1}{4}$ in. M.C.W.	Length 9 inches. Bore $6\frac{1}{4}$ in. M.C.W.	Length 10 inches. Bore $6\frac{1}{4}$ in. M.C.W.	Length 12 inches. Bore $6\frac{1}{4}$ in. M.C.W.	Length 14 inches. Bore $6\frac{1}{4}$ in. M.C.W.
Length 4 inches. Bore $6\frac{3}{4}$ in. M.C.W.	Length 6 inches. Bore $6\frac{3}{4}$ in. M.C.W.	Length 8 inches. Bore $6\frac{3}{4}$ in. M.C.W.	Length 9 inches. Bore $6\frac{3}{4}$ in. M.C.W.	Length 10 inches. Bore $6\frac{3}{4}$ in. M.C.W.	Length 12 inches. Bore $6\frac{3}{4}$ in. M.C.W.	Length 14 inches. Bore $6\frac{3}{4}$ in. M.C.W.
Length 4 inches. Bore $8\frac{1}{2}$ in. M.C.W.	Length 6 inches. Bore $8\frac{1}{2}$ in. M.C.W.	Length 8 inches. Bore $8\frac{1}{2}$ in. M.C.W.	Length 9 inches. Bore $8\frac{1}{2}$ in. M.C.W.	Length 10 inches. Bore $8\frac{1}{2}$ in. M.C.W.	Length 12 inches. Bore $8\frac{1}{2}$ in. M.C.W.	Length 14 inches. Bore $8\frac{1}{2}$ in. M.C.W.

— SCALE OF MEASURE ONE INCH TO THE FOOT. —

For prices, see Price List No. 243, which will be sent free on application.
The weight per lineal foot of these cases is about as follows:— $4\frac{1}{2}$ in. bore, $5\frac{1}{2}$ lbs.— $4\frac{3}{4}$ in. bore, 6 lbs.— $5\frac{1}{4}$ in. bore, 7 lbs.— $5\frac{3}{4}$ in. bore, 8 lbs.— $6\frac{1}{4}$ in. bore, 9 lbs.— $6\frac{3}{4}$ in. bore, 10 lbs.— $8\frac{1}{2}$ in. bore, 14 lbs.

COMMON DRAIN TILE.

FOR SALE BY THE MOORHEAD CLAY WORKS, Philadelphia.

This ware is used for draining away the *surface* moisture around foundation walls, and in cellars, and is invaluable for the purpose of comfort and health. By its use damp, and mouldy cellars, and walls and the diseases arising therefrom are greatly lessened.

It is purposely made of soft texture and porous body, to assist the percolation of moisture through the material itself, as well as between the joints of the sections.

It is also used to imbed in the concrete filling on arches, to lessen the weight (*see in figure 20 on page 52*).

It is made in sections of 12 and 13 inches of length.

DIRECTIONS FOR USING

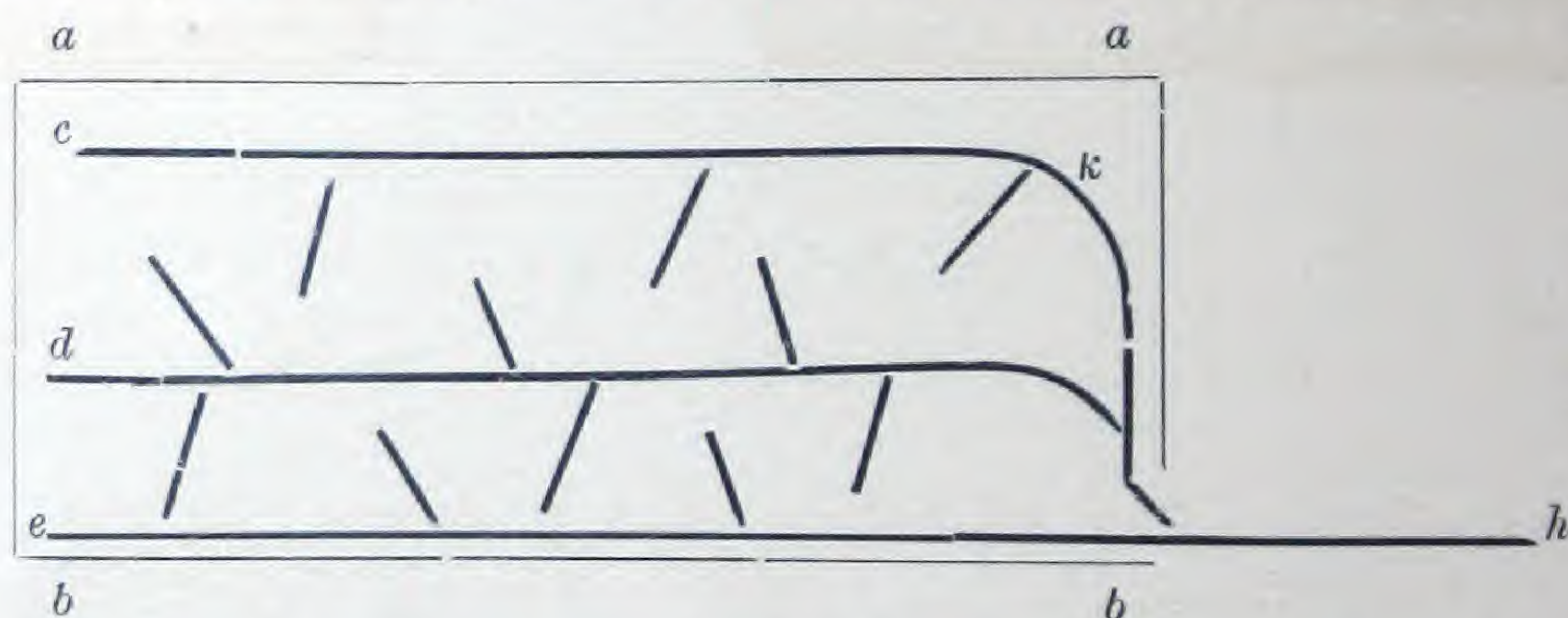
When used for draining foundation walls it should be laid as close to the wall as possible and on a little below the level of the bottom courses.

When used to drain surface moisture in cellars, it should be imbedded one foot or more in the earth, and the different lines of tile placed at different distances apart according to the nature of the soil. In clay soils such lines as in figure No. 19, should be within 4 feet of each other, whilst in gravelly or other open soils the lines can be further apart.

The whole system must have a uniform fall, and as much grade as possible, the more the better.

Figure No. 19.

Shows a horizontal view of a cellar and foundation walls drained with a system of Tiles.



a-a and *b-b* foundation walls. *c-d-e-h* main lines of Drain Tile from which are seen the laterals \ reaching every part of the soil. *e-h* is the large main receiving the others and discharging at *h* into the sewer or other outlet. *k* is a Tile Bend.

The ditch should be dug so as to have one perpendicular side, and as straight as possible, so that the tile, being laid hard against such side are sure to be kept in a true line. The bottom of the ditch should be smooth and free from all irregularities, and falling regularly towards the outlet.

Place the tiles end to end, and butt them firmly together, see that the inside lines of each tile are fairly in a line with the others. Cover over the top and sides of the joints with grass sods (*grass sides down*), hay or any other substance which will keep the earth out, and let the water go through the joint into the tiles (*use no mortar or cement*). In filling in the earth around the tile be careful not to displace them.

At the entrance and outlet of each line it is necessary to put a grating or sieve to keep out rats and other vermin. For this purpose we furnish cast iron gratings to suit any size, thus

(For prices of these Gratings see Price List No. 243, which will be sent free on application.)

When used for reducing the weight of the concrete on arches it is merely necessary to bury them in the concrete.



STANDARD PATTERNS AND SIZES OF COMMON DRAIN TILE.

FOR SALE BY THE MOORHEAD CLAY WORKS, Philadelphia.

Sole Tile.



Lengths 12 and 13 inches.

Sole Tile.

Sole Tile.



Lengths 12 and 13 inches.

Sole Tile.

Sole Tile.



Lengths 12 and 13 inches.

Sole Tile.



Lengths 12 and 13 inches.

Sole Tile.



Lengths 12 and 13 inches.

Sole Y Tile.



Lengths 12 and 13 inches.



Lengths 12 and 13 inches.

Sole Bend Tile.



Lengths 12 and 13 inches.

We have also all the other sizes of "Y" and Bend Tile, to suit any main or lateral of the above sizes.



Lengths 12 and 13 in. Bore 4 in.

ROUND TILE WITH OR WITHOUT LOOSE COLLARS.



Lengths 12 and 13 inches.



Lengths 12 and 13 inches.

These Tiles are for use in treacherous or moveable soils. We have of these sizes 1 1/4 in., 1 1/2 in., 2 in., 2 1/2 in., 3 in., 4 in., 5 in., 6 in. bore with T and Y branches, reducers, and bends, and can furnish them with or without the sleeve or collar.

In using, the sections are laid butting together inside the sleeve or collar.

HORSE SHOE TILE (Open Bottoms.)



Lengths 12 and 13 inches.



Length 12 and 13 inches.



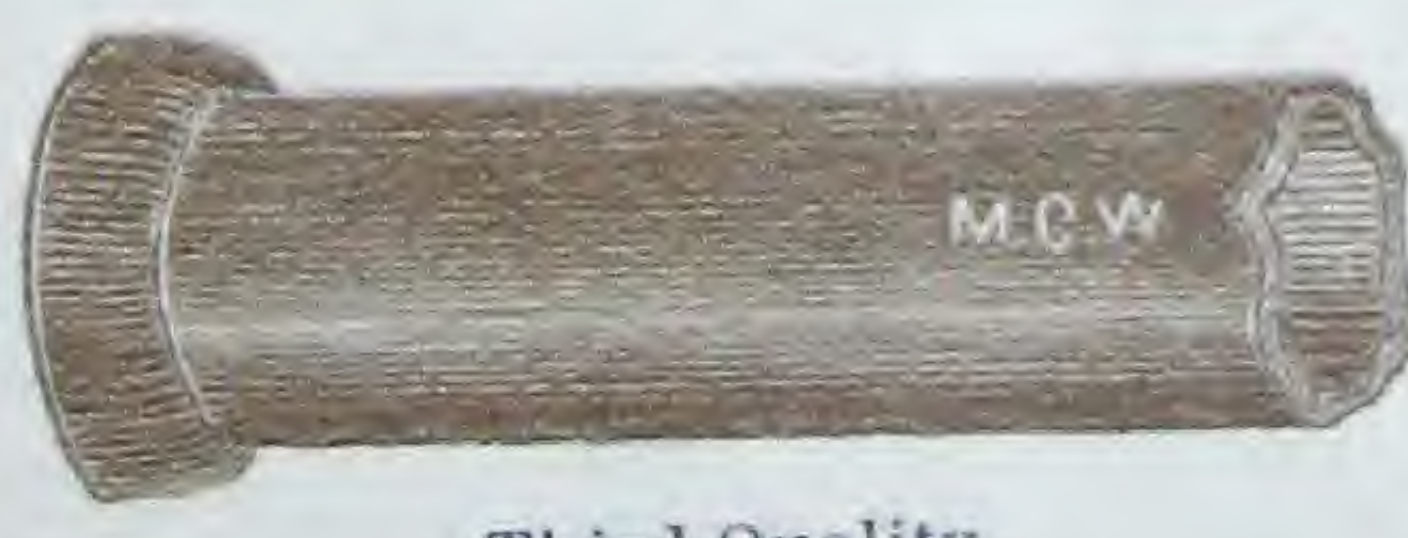
Lengths 12 and 13 inches.

Also, for all of the above purposes, can be used second, third, and fourth quality of our Vitriified Clay Drain or Sewer Pipe, which being made of a much more durable clay. and burned under a greater heat, is more serviceable and stronger than the above Common Drain Tile. We give here a few illustrations of

VITRIFIED DRAIN AND SEWER PIPES.



Second Quality.



Third Quality.



Fourth Quality.

Of these we have 2, 3, 4, 5, 6, 8, 10, 12, 15, 18, 21, 24, 30, 36, 42, and 48 inch bores, and all shapes of single and double T and Y Branches, Bends, etc.

—SCALE OF MEASURE, ONE INCH TO THE FOOT.—

For prices see Price List No. 243, which will be sent free on application.

For advantages of using these see page 48.

TERRA COTTA ARCHES.

Pattern No. 86.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

For making buildings fire-proof, deafening floors, sustaining great weights, covering vaults, railroad and other culverts, window and door heads, etc.

Terra Cotta being much stronger than brick work, these arches can be of much less thickness and weight of material. They require no "center" or scaffolding and ordinary labor can set them, as well as skilled mechanics and much more rapidly than masonry.

They make a smoother ceiling than brick work, and do not corrode like iron.

They can be used between wooden or iron joists, masonry walls, or any other locality where arches are of use.

DIRECTIONS FOR USING.

When in one piece, as in Pattern No. 86, set each section so as to preserve a uniform level on its under surface, with the adjacent sections, by the use of spalls of stone, brick, or terra cotta, and then fill in with cement.

Pattern No. 87.

When in two pieces as in pattern No. 87 place the outside edge *B-B* of each piece against the abutment *a-a* and lower the two pieces until they butt firmly together in the centre at *c*, first placing the key *D* (which can be an iron rod or a cylinder of terra cotta) in the groove between the pieces and imbedding it well in cement. Then level them up as before stated by inserting spalls between the outside edges and the abutments and fill in with cement.



For the strength of Terra Cotta Arches see the test made by Thomas Shaw, Engineer, which will be sent on application at this office.

Pattern No. 87 shows a Terra Cotta Arch in two sections. *a-a* shows iron joist. *B-B* the outside edge, of the left hand piece of the arch, shaped to fit the iron joist. *c* the centre line where the right and left hand pieces of the arch meet when in position. *D* shows the end of the key, which runs the full length of the arch.

— SCALE OF MEASURE IS ONE INCH TO THE FOOT. —
The weight of these Terra Cotta Arches is about six-sevenths of an ounce avoirdupois per cubic inch of material.

For prices see Price List No. 243 which will be sent free on application

PLAIN AND ENCAUSTIC TILES FOR TESSELATED FLOORS, WALLS, ETC.

IMPORTED AND FOR SALE BY THE MOORHEAD CLAY WORKS, PHILADELPHIA:

The art of selecting, manufacturing, and using colored plates or tiles for the production of variegated or mosaic pavements etc., is very old and the remains of such pavements are frequently exhumed from ancient ruins.

The art appears to have been lost for some ages and was rediscovered and perfected by Minton, the eminent English potter.

The tiles are made of pulverized flints and clays, colored to any desired tint, pressed into any geometrical shape, and baked in kilns to a hardness which defies ordinary wear and tear.



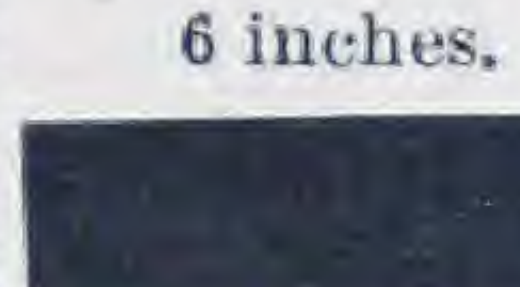



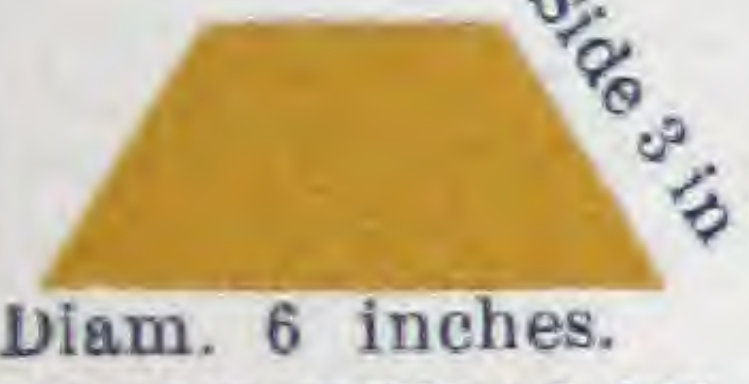



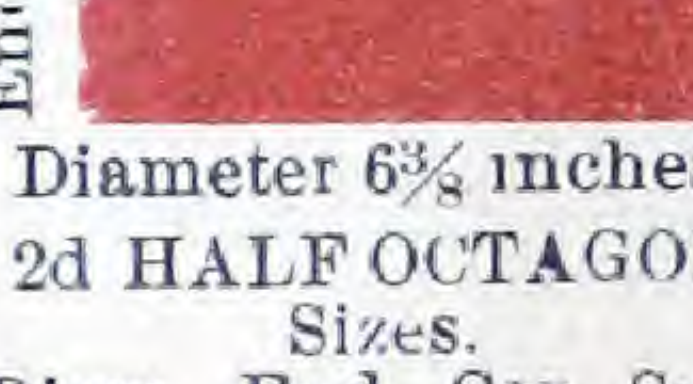


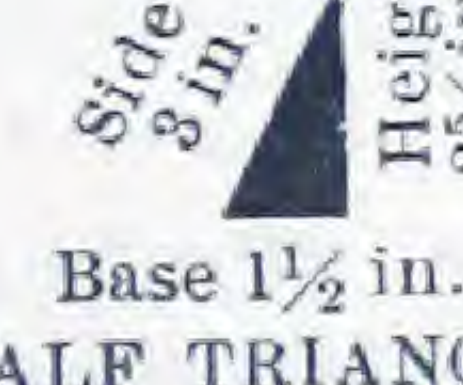
They are adapted and unequalled for forming pavements of vestibules and walks, piazzas, halls, corridors, staircases, dining-rooms, kitchens, bath-rooms, conservatories, saloons, offices, show-rooms, bars, lobbies, public halls, etc., and also for the inside and outside decoration of edifices as in walls, dadoes, etc. Tiles of extra thickness are made for use in warehouses, vaults, etc.

They are more easily transported, stronger and lighter, more impervious to weather, dampness and stains, far more durable, and give a much wider range of design than marble, slate etc., and do not wear smooth so as to endanger the footing.

STANDARD SHAPES AND SIZES OF PLAIN TILE.

One-half inch in thickness (greater thickness made to order), and Colors as follows:

1 Red. 2 Black. 3 Buff. 4 Grey. 5 Chocolate. 6 Fawn. 7 White. 8 Dove. 9 Blue. 10 Green.

 <p>SQUARES. Side 6 inches. Side 3 inches.</p> <p>Sizes. 6 x 6 5 x 5 4 1/4 x 4 1/4 4 x 4 3 x 3 2 1/8 x 2 1/8 2 x 2 1 1/2 x 1 1/2 1 1/8 x 1 1/8 1 x 1</p> <p>Colors. 1, 2, 3, 4, 5, 6. 1, 2, 3. 1, 2, 3, 4, 5, 6. 7, 8, 9, 10.</p>	 <p>DIAGONAL HALF SQUARES. Diagonal 8 1/2 in. Side 6 inches. Diag. 4 1/4 in.</p> <p>Sizes. 6 x 6 5 x 5 4 1/4 x 4 1/4 4 x 4 3 x 3 2 1/8 x 2 1/8 2 x 2 1 1/2 x 1 1/2 1 1/8 x 1 1/8 1 x 1 3/4 x 3/4</p> <p>Colors. 1, 2, 3, 4, 5, 6. 1, 2, 3. 1, 2, 3, 4, 5, 6. 7, 8, 9, 10.</p>	 <p>STRIPS. 6 inches. 2 inches.</p> <p>Sizes. 6 x 4 6 x 3 6 x 2 6 x 1 1/2 6 x 1 4 1/4 x 2 1/8 4 1/4 x 1 1/8 3 x 1 1/2 3 x 1 2 1/8 x 1 1/8 2 x 1 1 1/2 x 3/4</p> <p>Colors. 1, 2, 3, 4, 5, 6. 1, 2, 3. 5, 6. 1, 2, 3, 4, 5, 6. 3, 4, 5, 6. 7, 8, 9, 10.</p>	 <p>OCTAGONS. Diameter 6 inches. Side 3 in. Cor. 2 1/4 in.</p> <p>Sizes. 6 in. 3 in. 2 1/8 in. 3 " 1 1/2 " 1 1/8 "</p> <p>Half inch thick. Colors. 6 in. 1, 2, 3, 4, 5, 6. 3 in. 1, 2, 3, 4, 5, 6. 7, 8, 9, 10.</p>	 <p>1st HALF OCTAGON. Diameter 6 inches. Side 3 in. End 1 1/2 inches. Cor. 1 1/8 in.</p> <p>Sizes. 6 in. 1 1/2 in. 2 1/8 in. 3 in. Half inch thick. Colors 1, 2, 3, 4, 5, 6.</p>	
 <p>HEXAGON. Diameter 6 inches. Side 5 1/8 in. 1/2 in. thick.</p> <p>Sizes. 6 x 5 1/8 in. 3 in. Colors. 1, 2, 3, 4, 5, 6.</p>	 <p>1st HALF HEXAGON. Diameter 6 inches. Side 3 in. Diam. 6 inches. Side 3 in.</p> <p>Sizes. 6 x 2 5/8 in. 3 in. Colors. 1, 2, 3, 4, 5, 6.</p>	 <p>LOZENGE. Diameter 5 1/4 in. Side 3 in. Diam. 5 1/4 in. Side 3 in.</p> <p>Sizes. 5 1/4 x 3 in. 3 in. 3 7/8 x 1 5/8 in. 2 1/8 in.</p> <p>Colors. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.</p>	 <p>EQUILATERAL TRIANGLE. Side 3 in. 1/2 in. thick.</p> <p>Sizes. Side 3 in. 2 1/8 in. 1 1/2 in. Colors 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.</p>	 <p>LONG HEXAGON. Diameter 6 in. Side 3 in. Width 3 in.</p> <p>Sizes. 6 in. 3 in. 2 1/8 in. 3 in. 6 3/8 in. 1 1/8 in. 3 in. 2 1/8 in. Half inch thick. Colors. 1, 2, 3, 4, 5, 6.</p>	 <p>2d HALF OCTAGON. Diameter 6 3/8 inches. Side 3 in. End 1 1/8 in. Cor. 1 1/8 in.</p> <p>Sizes. Diam. End. Cor. Side. 6 3/8 in. 1 1/8 in. 3 in. 2 1/8 in. Half inch thick. Colors. 1, 2, 3, 4, 5, 6.</p>
 <p>2d HALF HEXAGON. Diameter 5 1/4 inches. Side 3 in. End 1 1/2 in.</p> <p>Sizes. 5 1/4 x 3 in. 1 1/2 in. 3 in. Colors. 1, 2, 3, 4, 5, 6.</p>	 <p>SPLIT HALF LOZENGE. Diameter 5 1/4 in. Side 3 in. Diam. 5 1/4 in. Side 3 in.</p> <p>Sizes. 5 1/4 x 1 1/2 in. 3 in. 3 7/8 x 1 1/8 in. 2 1/8 in. Colors. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.</p>	 <p>HALF TRIANGLE. Base 1 1/2 in. Side 3 in. Height 2 5/8 in.</p> <p>Sizes. Base. Height. Side. 1 1/2 in. 2 5/8 in. 3 in. 3/4 " 1 1/8 " 2 1/8 "</p> <p>Half inch thick. Colors 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.</p>	<p>Almost any design can be made by combining these tiles. Any other shapes, sizes or colors will be made to order. These Tiles are either unglazed or glazed as desired. Weight of Tile half inch thick is 5 lbs. per square foot. Scale of measure 1 1/2 inch to the foot. For directions for laying, see page 52 and 53. For prices, see Price List No. 243, which will be sent free on application.</p>		

STANDARD SHAPES AND SIZES OF ENCAUSTIC FIGURED TILE.

Thickness of material three-quarters inch. Colors as follows:—

- Combination No. 1, Red and Buff, or Red and Black or Chocolate and Buff, or Black and Buff.
 " 2, Black, Red and Buff, or Red, Chocolate and Buff.
 " 3, Black, Red, Buff and White.
 " 4, Blue, Red and Buff.
 " 5, Blue, Red, Buff and White.
 " 6, Black, Red, Buff, Blue and White.



SQUARES

Sizes.
6 x 6
4 1/4 x 4 1/4
3 x 3
2 1/8 x 2 1/8

For Colors see Combinations named above.

The standard designs or figures on these Tiles are innumerable and can be seen only by examining our stock.

Any other shapes, sizes, colors or designs will be made to order.

These Tiles are either unglazed or glazed as desired. Weight of Tiles, 3/4 inch thick, is 8 lbs. per square foot of surface.

Scale of Measure one and one half inch to the foot. For directions for laying see pages 52 and 53.

For prices, see Price List No. 243, which will be sent free on application.



BORDER.

Sizes.
6 x 4 1/4
6 x 4
6 x 3
6 x 2
6 x 1 1/2
6 x 1

For Colors see Combinations named above.

We also furnish Majolica and glazed Tiles for hearths, fire-places, dadoes, and ornamentation of exterior or interior walls, Also glazed Earthenware Tiles with any color of surface, and with either printed or painted designs thereon.

DIRECTIONS FOR LAYING FLOOR TILES.

SOLD BY THE MOORHEAD CLAY WORKS, Philadelphia.

TO PREPARE THE FOUNDATION.—

As the whole stability of the floor depends entirely on the perfect solidity of the under structure, and as any vibration or motion in the same tends to loosen and break the tiles, it is of the utmost importance to pay strict attention to the following notes:

Note 1. If the tiles are to be laid on arches of brick, stone, iron, terra cotta, or other like material, level up the space, to within $1\frac{1}{2}$ inches of the under surface of the tile, with a coarse but solid concrete of mortar mixed with broken brick or stone, as D D in Figure No. 20.

Note 2. When this concrete is hard enough to walk upon, dampen its surface and lay upon it one inch of good concrete of mortar and gravel, well troweled, as F f in the Figure.

Note 3. When this is hard enough to walk upon, dampen its surface and lay upon it a bed one eighth of an inch thick, composed of cement and sand, well troweled, as g in the Figure. *If Portland cement is used, it will require 1 part cement to 2 of sand. If American cements are used, 1 of cement to 1 of sand. Good, sharp, clean "quarry" sand is better than "bar" sand. Let it harden sufficient to walk upon.*

Note 4. After laying down loosely the centre tile of the whole floor pattern, exactly in the position you desire it to be in the finished floor, then with the tiles used loosely, carry out, to the walls or sides, enough of the pattern to see with which tile you are to commence with at the walls or sides, for although the rule is "always work away from your pattern centre point," yet in practice it is found to be much more convenient to commence at the wall or side and work up to your centre, carrying up the whole width or length of the space until you lay past the centre line, and then continuing on to work away from the centre point towards the opposite wall or side. You are now ready to commence

TO LAY THE TILES ON ARCHES —

Note 5. With a broom clean off all loose stuff from the floor, named in Note 3, and dampen its surface. Soak the tiles in water until they cease to create air bubbles, and then lay them while wet, as follows:

Note 6. Lay the tiles in a floating of pure cement, as g in the Figure. ("Portland" is the best, as it is not liable to stain the tile: but good American cements are much used.)

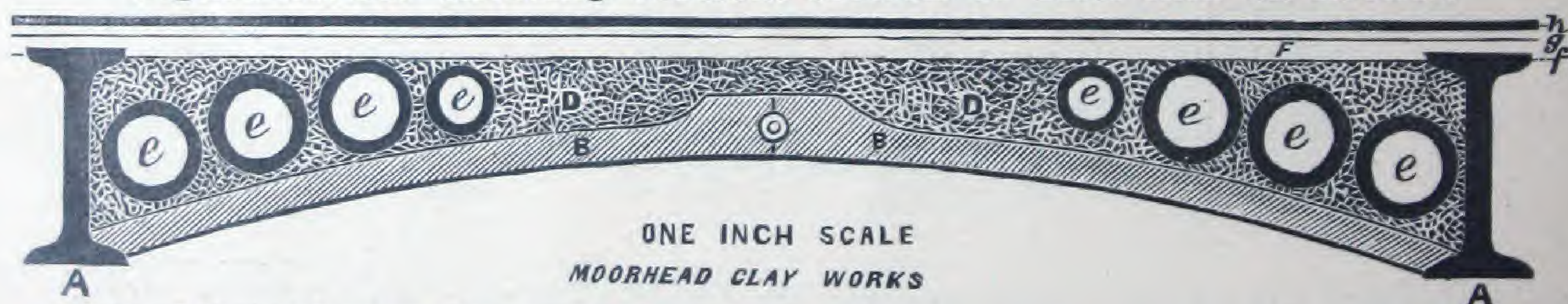
Note 7. Use a wooden straight edge (see S in the Figure No. 22) thick enough to come flush with the proposed surface of the tile—and work sections of tile at one time, as seen in Figure No. 22. See that the cement comes up well around the tile, and with the edge of a small trowel equalize the jointings of the tile. After each section is laid, level up the tiles by striking firmly with a mason's hammer on a flat, hard leveling block, laid over the surface of several tiles at once.

Note 8. After the floor is completed, immediately float it all over its surface with a slush made of the sand and the refuse of your cement buckets, and move this slush to and fro with swabs of loose cloths or brooms. This will complete the filling in of the joints and will scour off cement stains and dirt. Remove the slush and let the floor lay until hard enough to walk upon safely, before allowing travel upon it.

Note 9. IN MIXING CEMENT it is not well to do so in large masses, or one part will "set up" or harden before use. Mixing by the bucket full is preferable.

Note 10. TO CUT THE TILE to any size or shape, first make on its face a pencil line of the desired direction, lay the tile, face up, on a solid, even surface, and pass to and fro over the pencil line the edge of a fine and small "cold" chisel, at the same time gently striking the chisel with a light hammer until the tile falls apart. If the joint is exposed to sight, then the cut edge can be rubbed smooth on a piece of sand stone by using water, sand and friction. Whenever practicable, the wainscoting should rest on the tile, to hide the joints.

Figure No. 20. Showing vertical section of Tiles laid on arches.



A A—Joists of Iron or other material.

B B—Terra-Cotta Arch in two pieces, keying in the middle with the small roll. Of course brick or other material can be used for arches, but terra cotta arches are far lighter, stronger, and easier laid. These arches are described in full on page No. 50.

D D—Concrete of mortar, and broken stuff, as in Note No. 1.

e, e, e, etc.—Hollow terra cotta pipes or drain tile, embedded in the concrete, to lighten the weight on the arches. These pipes and drain tile are described in full on pages 48 and 49.

F f—Concrete of mortar and gravel, as in Note No. 2.

g—Cement and sand, as in Note No. 3. h—Tile laid in pure cement, as in Note No. 6.

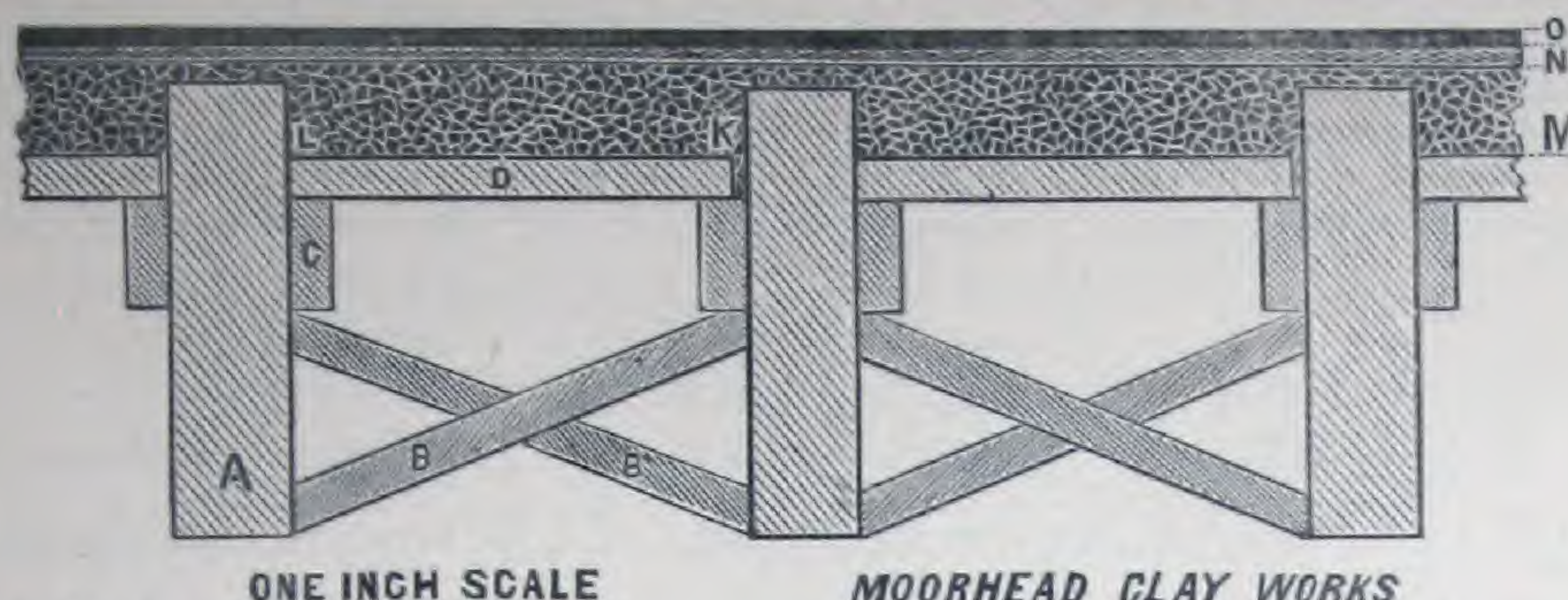
TO LAY THE TILES ON WOODEN FLOORS.—

Note 11.—IF THE TILES ARE TO BE LAID ON JOIST OF WOOD OR OTHER MATERIAL without arches, it is absolutely essential to first strengthen and stiffen the joist to prevent all vibration or motion. This may be done by "bridging" or herring boneing" between the joists, as B B in Figure No. 21. Firmly fasten by nailing or otherwise, to the joists on each side and along its length, commencing three inches from its top, fillets of wood—say 3 inches by 1 inch—as c in Figures Nos. 21 and 22, and fill in between the joist by short pieces of board, as D in Figures Nos. 21 and 22, resting on and nailed (put a nail in each of the four corners of each piece to prevent it curving) at each end to the fillets c, keeping the short pieces $\frac{1}{4}$ inch apart and also away from the joist to allow for swelling when the wet mortar is applied, as at P and K in Figures Nos. 21 and 22. Then proceed as mentioned in Note 2, filling in enough mortar or concrete to bring its top surface to within $\frac{3}{8}$ inch of the bottom surface of the tiles, afterwards proceed as noted in Notes 5, 6, 7, 8, 9 and 10.

(CONTINUED ON PAGE 53.)

(Continued from page 52.)

Figure No. 21. Showing vertical section of Tiles laid on wooden floors.



A—Joists of wood or other material.

B B—"Bridging" or "Herring Boneing," fastened to joists A, as in Note 11.

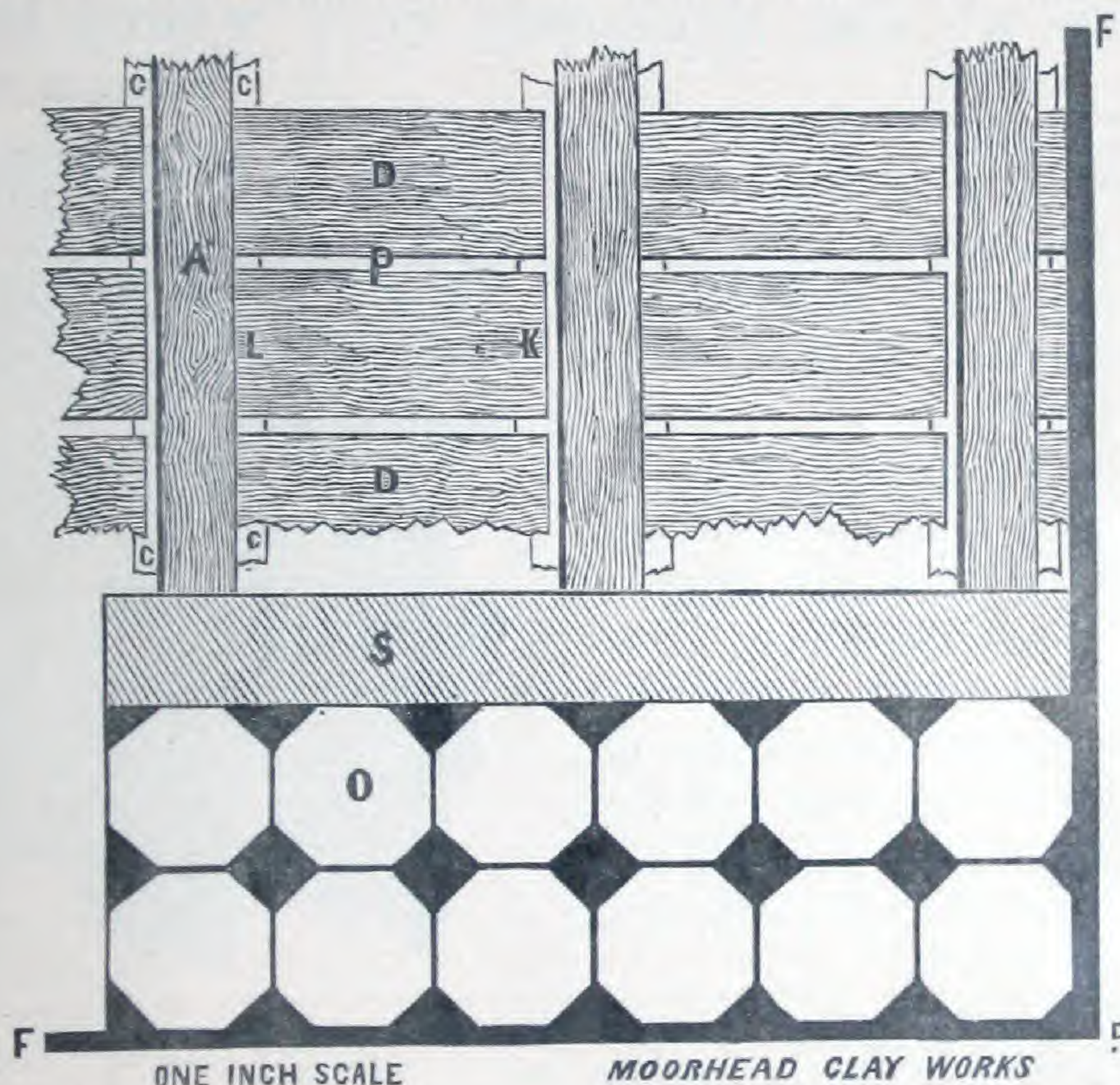
C—Filletts fastened to joists A, as in Note 11.

D—Short pieces of boards resting on and nailed to Fillet C, and touching the joists A at end L, and leaving space between the other end, K, and the joist, to allow for swelling, as in Note 11.

M and N—Mortar or concrete, as in Note 11.

O—Tile laid in pure cement, as in Note 6.

Figure No. 22. Showing horizontal section of Tiles laid on wooden floors.



A—Joists of wood or other material.

c c c c—Filletts fastened to joist A, and supporting short pieces D D, as in Note 11.

D D—Short pieces of boards resting on and fastened to the fillets C, showing an opening between the short pieces at P, also touching joist A at L, and leaving a space at K, to allow for swelling, as in Note 11.

F F F—The wainscoting resting on and lapping over the Tiles "O," as in Note 10.

O—A section of Tiles (composed of 6x6 octagon white, and 2½x2½ black squares and diagonal half black squares,) laid and squared up by means of the straight edge S, as in Note 7.

S—A wooden straight-edge, used to square up each section of Tiles. It also acts as a guide to level the section of Tiles by resting on it one end of the leveling block whilst hammering, as in Note 7.

Tiles for the FACINGS OF WALLS, FIRE PLACES, DADOES, Etc., can be laid in plaster, if not exposed to the weather. But if so exposed, should then be laid in the best Portland cement. After the walls, etc., have been properly prepared, proceed as in Notes 4, 5, 6, 7 and 8.

TO CLEAN THE TILES.—

Note 12. After the tile floors or walls are completed, a saline scum will arise from the cement to the face of the tile, for some weeks, and this must be washed off with cold water and soft soap, applied with a scrubbing brush.

Note 13. Stains or dirt can be removed by muriatic acid, diluted with half water and applied with pumice stone. The acid must be carefully wiped off, and always, after washing, the tiles should be well wiped with a clean dry cloth. The water should be perfectly clean.

Note 14. We respectfully remind architects and builders that, as these tiles form imperishable walls and floors, and as the beauty of the design depends largely on their being properly laid, the work should be trusted only to skillful workmen.

We will forward estimates and have the tiles laid in any part of the world, by competent workmen, thoroughly trained.

For Prices see Price List No. 243, which will be sent free on application.

For Standard Sizes, Shapes and Colors see page 51.

TERRA COTTA ROOF TILE.


Manufactured and For Sale by the Moorhead Clay Works, Philadelphia.

The use of Roof Tile made of clay is very ancient, and instances are known of such tiles having been removed from abandoned houses, and sold for more than first cost, after having been in constant service for over 100 years. They are easily put on, or removed, or repaired, and are the most conducive to comfort and health of any roofing material extant, for being non-conductors and non-radiators of heat, they resist the sun's rays in summer, and retain the artificial heat, within a building, in winter. Their durability is unquestioned. They are perfectly fire-proof. They withstand all acids and gas, and neither rot nor rust. They require no skilled labor to adjust them. They can be of either greater or less weight than slate. They do not expand, creep, or crack like tin, zinc or copper, and will certainly supercede all other roofing material now known.

STANDARD PATTERNS AND SIZES OF TERRA COTTA ROOF TILE.

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

Pattern No. 43.

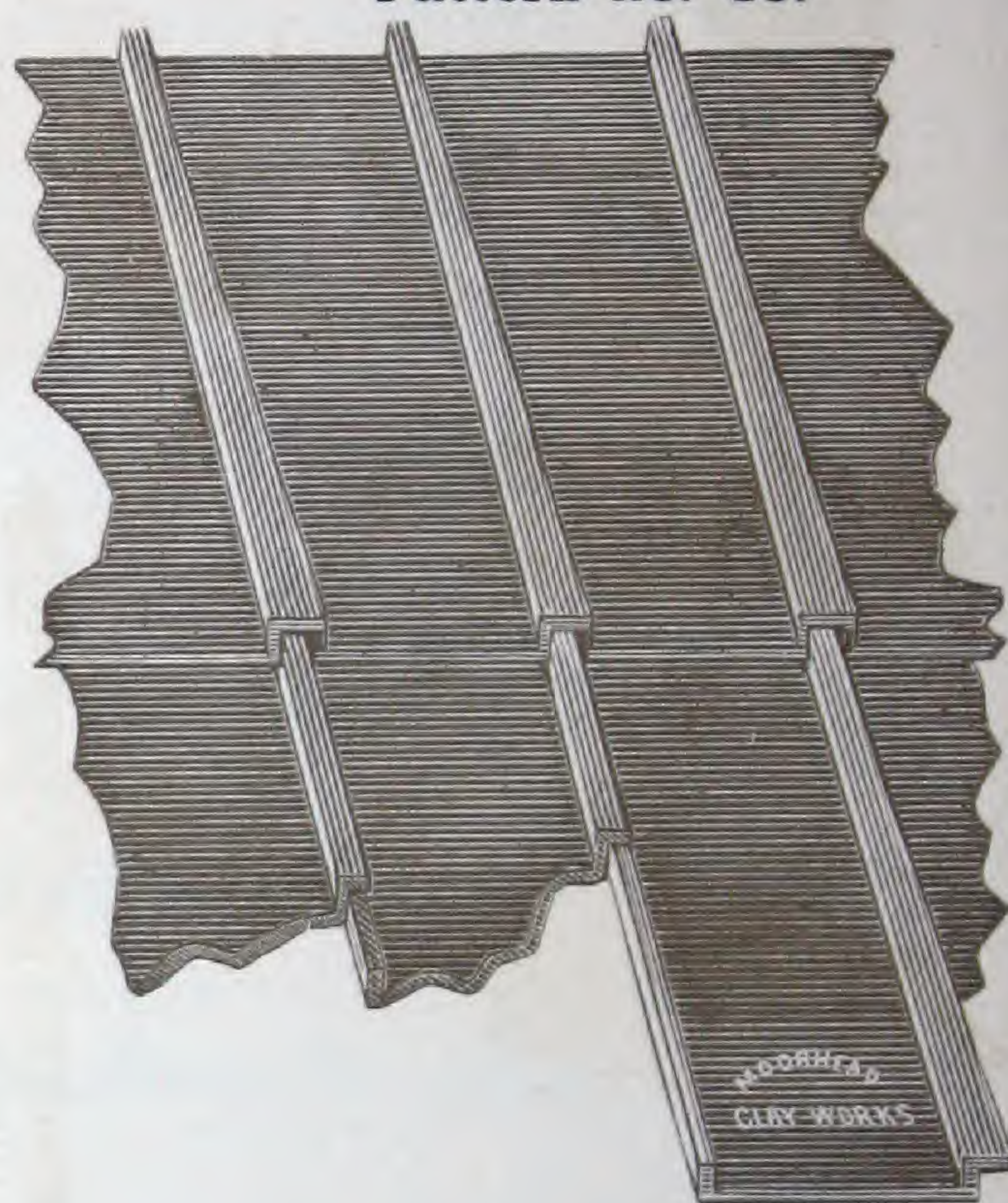
This pattern is provided at the upper edge with a lip  by which it can be hung to the lathes, and needs no sheathing or nailing and is specially adapted for the roofs of chemical laboratories, iron furnaces, etc., where the fumes destroy all nails or other metal work.

For boiler houses and localities where it is desired to get rid of heated air, it can be laid without mortar, as the joints will give egress to the heat, but keep out rain and snow.

For tight roofs it is necessary to use mortar or cement in the joints, and for such purpose the Tile should be ordered with "unglazed joints."

Each Tile is of rectangular shape and measures 19 inches by 9 $\frac{1}{4}$ inches and will cover, when in position about one square foot.

We furnish them glazed (*and of the color of the cut*), either outside or inside, or both, or unglazed (*the color of Ridge Tile, see page 55*).



Pattern No. 42.



This pattern requires a sheathing of boards and felt underneath, and is put on with nails or screws.

Each Tile is of Lozenge shape with a side of 8 $\frac{1}{2}$ inches and a short diameter of 8 $\frac{1}{2}$ inches, and long diameter of 16 inches, and will cover, when in position, about $\frac{1}{2}$ square foot.

The Tiles can be made of any color such as red, buff, black, brown, etc., and many beautiful designs can be thereby formed.

They can be either glazed or unglazed.

We also furnish the old style Rectangular Tile, and English Pan-Tile, and any other patterns or size will be made to order.

The weight of Terra Cotta roofs is about six-sevenths ounce per cubic inch of material.

— SCALE OF MEASURE ONE INCH TO THE FOOT —

For prices, see PriceList No 243 which will be sent free on application.

STANDARD PATTERNS AND SIZES OF TERRA COTTA RIDGE TILE, CRESTINGS, AND PEAKS.

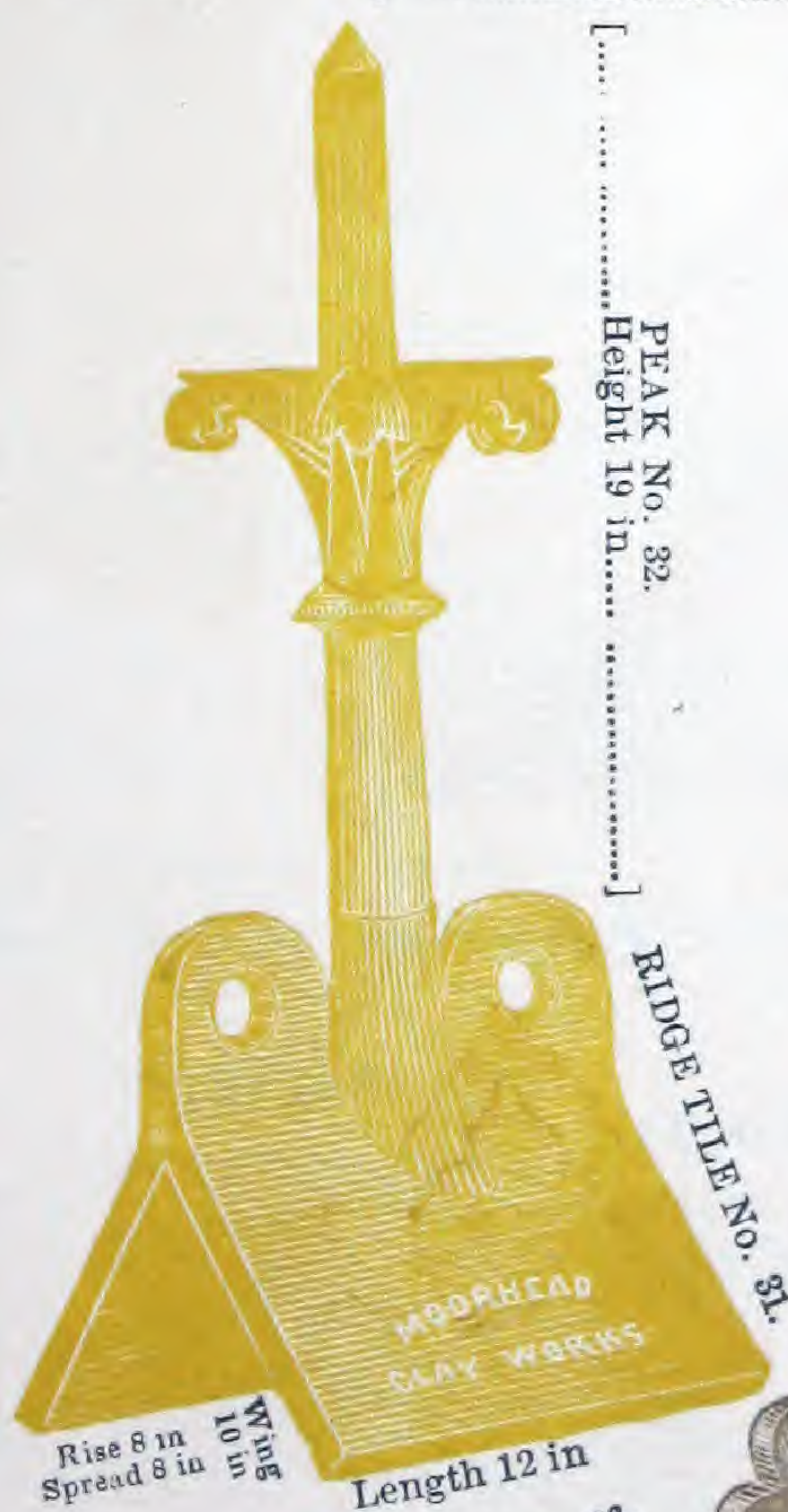
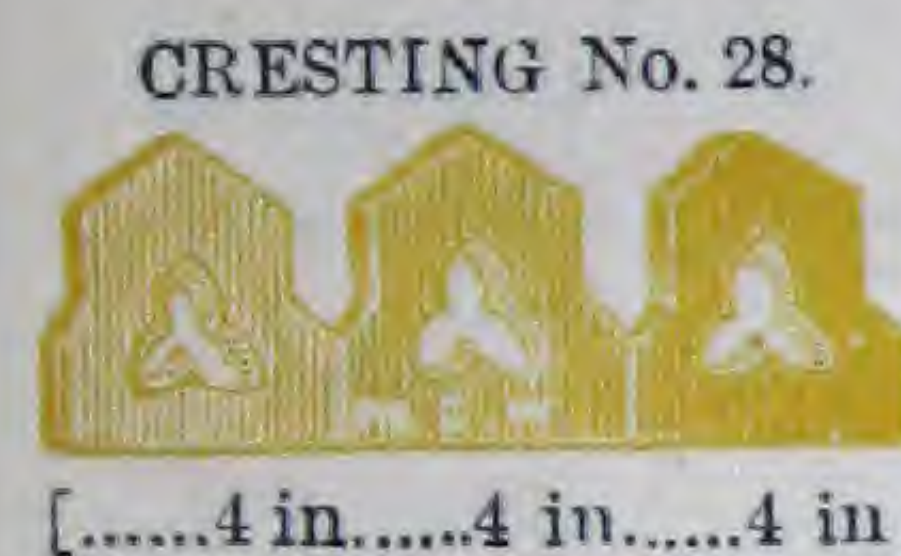
MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

CRESTING No. 30.

CRESTING No. 29.

CRESTING No. 29.

CRESTING No. 22.



DIRECTIONS FOR USING.
The Ridge Tile is first imbedded in mortar or cement on the peak of the roof and properly lined and the crest or peak is then set in the groove or socket of the Ridge Tile and if possible break joints therewith.

Any other shape, size, or measure will be made to order.
—SCALE OF MEASURE IS ONE INCH TO THE FOOT—
For prices see Price List 243 which will be sent free on application.

STANDARD PATTERNS AND SIZES OF ORNAMENTAL BUILDING WARE,

MANUFACTURED BY THE MOORHEAD CLAY WORKS, Philadelphia.

Pattern No. 40.

Every known design can
be reproduced.

Any new design can
be made to order.

Pattern No. 80.



Corinthian Capital.



Banded Globe.

Pattern
No. 39.



Baluster.

Pattern 44.



Freize Plate.

Pattern 41.



Panel.

Patterns:

No. 49.



No. 77.



No. 71.



No. 76.



No. 73.



No. 72.



No. 75.



No. 69.



No. 74.



No. 70.



No. 78.



No. 50.



Corbels, Brackets, Keys, Centres, etc., for

Walls, Window and Door Heads, Mantles, etc.

— SCALE OF MEASURE ONE INCH TO THE FOOT. —

For prices see Price List No. 243, which will be sent free on application.

(CONTINUED ON PAGE 57.)

Continued from page 56.

Pattern No. 35.



Finial.

This material is light, fire-proof and everlasting.
It does not corrode, rust or decay.
It resists the weather and gases.

Every known shape, or any new design can be made to order, and can be painted and enameled of any color.
It retains paint or enamel for all time.

Pattern No. 36.



Finial.

Pattern No. 82.



Finial.

— SCALE OF MEASURE ONE INCH TO THE FOOT. —

For prices see Price List 243, which will be sent free on application.

Also, TERRA COTTA CASINGS for the preservation of posts or beams planted in the earth.

Also, CRUDE AND PREPARED TERRA COTTA CLAY, EARTHENWARE CLAY, STONWARE CLAY, FIRE CLAY,

WINDOW and DOOR HEADS, HOLLOW BRICKS, HOLLOW PARTITIONS.

PUDDLING CLAY, MOULDING CLAY, SCULPTORS FINE CLAY, SLIP CLAY (or ALBANY EARTH), KAOLIN,

BAR SAND, BEACH SAND, QUARRY SAND, WHITE SAND, MICA (or GRAYS, FERRY SAND),

BATTEMENT PLATES, COMMON BRICKS, FIRE BRICKS, and SLABS.

CHAMOTTE (or BURNT and PULVERIZED) TERRA COTTA CLAY, FIRE STUFF, FIRE MORTAR, DOMESTIC CEMENTS, ROMAN CEMENTS, PORTLAND CEMENTS.

MODILLIONS, CONSOLES, BRACKETS, And all Architectural Ware.

By the ton or bbl. or 20 lb bag, or 12 lb bag.

For prices see Price List No. 243, which will be sent free on application.

Send for the following Catalogues:

CATALOGUE OF DRAINAGE AND SEWERAGE. CONTAINING DRAIN PIPE and FITTINGS } 2 to 48 inch SEWER PIPE and FITTINGS } bore DRAIN TILE Sole, Round and Horseshoe, GUTTER TILE, PLUMBER'S WARE, Etc.

MANUFACTURERS AND DEALERS IN ALL ARTICLES MADE OF EARTHENWARE, STONE WARE, FIRE BRICK WARE, CROCKERY, YELLOW WARE, ROCKINGHAM WARE, WHITE LINED WARE, CHEMISTS and PLUMBERS' WARE. AND EVERY ARTICLE MADE OF CLAY OR ITS COMPOUNDS.

CATALOGUE OF GEOMETRICAL TILE, ENCAUSTIC TILE, PAVEMENT TILE, FLOORING TILE, WALL TILE, MAJOLICA TILE, HEARTH TILE, WHITE EARTHEN TILE, TONED EARTHEN TILE, PRINTED EARTHEN TILE, PAINTED EARTHEN TILE, ART TILES, BORDER TILE.

CATALOGUE OF FANCY TERRA COTTA WARE. CONTAINING GARDEN VASES, PARLOR VASES, PEDESTALS, STATUARY, FOUNTAINS, COMMON FLOWER POTS, GREEN HOUSE POTS, FANCY FLOWER POTS, HANGING VASES (or AMPELS), WALL VASES, CORNER VASES, WINDOW BOXES, FERN DISHES, CUSPIDORES, WALL BRACKETS. Chains, Cords and Ornaments for Hanging Vases. ANTIQUE WARE, MONKEY JUGS, MONKEY JARS, BARRELS, FEED BOXES, HORSE TROUGHS, Etc. COFFINS, Etc.

THE MOORHEAD CLAY WORKS,

No. 11 S. SEVENTH STREET, (East side below Market Street.)

PHILADELPHIA.

LETTERS OF RECOMMENDATION AND TESTIMONIALS

From Prominent and Practical Men.

PHILADELPHIA, September 28, 1868.

I have successfully used the Terra-Cotta Ware, manufactured at the Moorhead Clay Works.

The hardness to which it is burnt renders it invaluable for all outside work, as Drain Pipes, Chimney Tops and Architectural Ornaments, whilst the fineness of finish and innumerable shapes of which it is capable, makes it peculiarly adapted for inside and outside decoration. It is evidently entirely free from decay. Its use for the above purposes, and particularly for Hot Air and Smoke Flues, has become very extensive and has always given complete satisfaction.

JOHN CRUMP, Architect and Builder, 1731 Chestnut Street.

PHILADELPHIA, October 1st, 1868.

The use of Terra-Cotta Ware for Drain Pipe, to convey water, gas, acids, &c., is attracting considerable attention in our large cities, being cheaper and more durable than other materials for like purpose. The Ornamental Chimney Tops, manufactured by the "MOORHEAD CLAY WORKS," of Philadelphia, which are being used to replace the square brick construction, and the compact Flue made of the same material, have drawn our notice to this very useful and economical Ware, and we cheerfully recommend its general use.

GEORGE SUMMERS, Architect.

PHILADELPHIA, January 6th, 1869.

WM. L. WILSON, Esq., *Moorhead Clay Works:*

Dear Sir:—A careful examination of your Terra-Cotta Chimney Tops, gives us the opportunity to say that we believe the use of them will, in a great degree (if not altogether), obviate the danger of *Fires*, caused by sparks finding vent through the joints of the common brick or stone chimneys, when they become eaten out by the weather and coal gas, and we would cheerfully recommend them to the public.

Yours, very truly,

TILLINGHAST & HILT, Agents,

Home Insurance Co., of New York; Springfield, of Springfield; Yonkers Insurance Co., of New York; Atlantic, of Providence; Lumberman's, of Chicago.

PHILADELPHIA, December 23d, 1868.

WILLIAM L. WILSON, Esq.:

Dear Sir:—We have made a critical examination of your "Terra-Cotta Flues," and have submitted some to the Inspectors of our different Companies, and can say with honesty that we believe they will serve as a great protection to dwelling houses, as many of the most disastrous fires have resulted from defective flues, to which your flues are not subject.

Very truly yours,

TILLINGHAST & HILT,

Agents and Attorneys for Home Ins. Co., of New York; Springfield F. and M. Ins. Co., of Springfield; Yonkers Fire Ins. Co., of New York; People's Fire Ins. Co., of Worcester; Atlantic Fire Ins. Co., of Providence; Lumberman's Fire Ins. Co., of Chicago; Monumental Fire Ins. Co., of Baltimore.

409 Walnut Street, Philadelphia.

WAGNER FREE INSTITUTE OF SCIENCE,

PHILADELPHIA, October 5th, 1868.

On a visit to the Moorhead Clay Works, a few days ago, I was delighted with the many varied forms, both useful and ornamental, which attracted my attention. Here I saw Water and Heat Pipes of all conceivable forms and sizes, highly vitrified and impervious to the action of acids or water. Their composition at once precludes destructibility. I have used them freely in the new Laboratory just erected at the Wagner Free Institute of Science, and feel assured of their permanence, as carbonic acid gas or coal has no effect upon them, and I therefore feel free to recommend them for chemical purposes. My attention was then drawn to the grace and beauty of the Urns and Chimney Tops. Seeing them reminded me of the constant use of them in Italy, where every good house is supplied with them. Here are to be found all the forms and sizes the most fastidious can desire.

Every builder should make a visit to this extensive Establishment, and thus inform himself of the new availabilities of his profession. If these manufactures were more generally known, the chimneys of our beautiful new houses would be ornamented with Terra-Cotta Tops. They would not only be more economical, but more ornamental and durable.

Very respectfully,

WILLIAM WAGNER, Professor of Geology.

424 WALNUT STREET, PHILADELPHIA, October 1st, 1877.

TO THE MOORHEAD CLAY WORKS, 11 South Seventh St., Philadelphia:

I have quite recently had occasion to examine into the merits and utility of the Terra Cotta Ware manufactured by you, more particularly that portion for use as flues, chimney tops, and sanitary and sewer ware, and for strength, soundness of material, density of the glaze, and accuracy of make, can confidently recommend it.

Very truly yours,

BENJAMIN LINFOOT, Architect.

UNIVERSITY OF PENNSYLVANIA,

Towne Scientific School, Department of Civil Engineering, October 23rd, 1877.

I have examined the material composing the Chimney Tops, Flues, and other building ware manufactured by the Moorhead Clay Works of this city, and I believe it to be the best for resisting the action of coal gas, acids, weather, fire, and other elements to which such articles are necessarily exposed.

LEWIS M. HAUPT, Professor of Civil Engineering.

THE MOORHEAD CLAY WORKS

Were built at Spring Mills, Montgomery County, Pa., in the beginning of the year 1866, by A. S. Moorhead, of Pottsville, Pa., and Wm. L. Wilson, of Philadelphia, and on February 16th, 1869, were by a disastrous fire completely destroyed with all their contents. Although the disaster occurred at two o'clock in the morning, yet by seven o'clock of the same day, preparation for rebuilding were in operation, and during the same year, there arose on the site of the Factory destroyed, the present Works, nearly twelve times the capacity of the former, and the largest (in this line) in the United States.

This destruction, and consequent rebuilding, did not cause any interruption in the business of the firm, or in supplying our customers, but as the conflagration proved very unsatisfactory to all concerned, we determined our new Works should not be subject to the same casualty, and at a large expense our main buildings have been rendered almost entirely fire-proof, by the use of heavy stone walls, iron roofs, iron joist, iron girders and pillars, and partition doors, and of arches, and roofs, and chimneys made of Terra Cotta, and manufactured by ourselves. As our former buildings, became soon after our starting, too small for our increasing business, we decided that in rebuilding, our Works should be not only durable, but capacious, and we have now 63,000 square feet of flooring under cover.

Conscious that the manufacture of Clay Sewer Pipes was yet in its infancy, and that the present mode of manufacturing it was very primitive and rude, this firm, at the time of rebuilding designed and supplied ourselves with entirely new and patented machinery, which has enabled them not only to excel in quality, but also in size. At that time the largest size Pipe hitherto made in this country was 15 inches in bore. In the course of some eight months, we succeeded in making, in quantities, pipes of 30 inch bore (till then the largest Pipe ever pressed) with an area of 707 square inches, and we are now turning out in large quantities Pipes of **48** inch bore, and an area of 1810 square inches. We have more than doubled the capacity of the largest Clay Pipes hitherto made, viz.:—

48 inch Pipe made by the Moorhead Clay Works	1,810 square inches.
30 " " " previously	707 " "

Difference in favor of the Moorhead Clay Works	1,103 " "
--	-----------

We are now prepared to manufacture still larger sizes.

We have also produced the largest and best pieces of Building Terra Cotta ever attempted, some of our **Ornamental Chimney Tops** being of the enormous size of **5 feet** width of base, **5½ feet** at the widest cornice, and **18½ feet** in height and weighing **6,600 lbs.**

In wares either useful or ornamental, made of clay or its compound, we believe we are not excelled.

We have been awarded a medal and diploma by the **Centennial Exhibition**, of 1876, and also by the Maryland Institute, at Baltimore, Md., and the Franklin Institute, Philadelphia, and a variety of diplomas from State Fairs.

The active partner in the firm has had nearly twenty years experience in this line of industry, and by such experience, and our unequalled facilities, the firm hope to merit a continuance of the patronage we have constantly enjoyed from the beginning.

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CENTENNIAL MEDAL, 1876, AWARDED THE MOORHEAD CLAY WORKS, PHILADELPHIA.

Diploma of the East Pennsylvania
Agricultural and Mechanical Society.

Diploma of the Pennsylvania State
Agricultural Society.

Medal of the Maryland Institute.

Medal of the Franklin Institute.



THE ONLY MEDAL IN
ITS GROUP



THE LARGEST EMPORIUM OF CLAY WARE IN THE UNITED STATES.

CONSTANTLY ON HAND THE VERY BEST QUALITIES OF

DRAIN and SEWER PIPES (2 in. to 48 in. bore), either "Slip" or "Salt" GARDEN and PARLOR VASES, PEDESTALS and STATUARY, MAJOLICA, WHITE and TONED, PRINTED and PAINTED
Glazed, and the fittings for same. FANCY and COMMON HANGING VASES, FLOWER POTS, ART TILES, HOLLOW BRICKS, ARCHES, PARTITIONS,
CHIMNEY TOPS, Plain and Ornamental Tiles, Tiles for ROOFING, CHIMNEY FLUES, HEAT and VENTILATING BOILERS, ENCAUSTIC and GEOMETRICAL FLOOR TILES, PLUMBERS' WARE, CLAYS, SANDS, GROUND STUFF
CORNER VASES, WALL VASES, WINDOW BOXES, FERN DISHES, BATTLEMENT PLATES, FLOOR TILE, RIDGE TILE, ROOF TILE.

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